AIR CONDITIONING HEATING & REFRIGERATION NEWS

The Newspaper of the Industry

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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Laughter Keeps You Healthy
'Look' Looks at Us
Out of Our Mailbag

Stories of the Week

Recently *The Napanee Beaver,* a Wisconsin weekly newspaper, proclaimed in a box:

"You may notice some typographical errors in this paper. They were put in intentionally. This paper tries to print something for everyone and some people are always looking for mistakes."

Lee G. L. Eagle wangled a suspended sentence for his client.

They hung the wretch.

Laughter Keeps You Healthy

Our good friends at *Parade* magazine (among whom we proudly number the incomparable "Red Motley" and former neighbor Ed Kimball) recently published an authenticated article which encourages laughing—frequently, and at every opportunity.

"Keeps you healthy," is the theme.

Everybody knows that the man who laughs easily gets along well socially. Best salesmen always "leave 'em laughing." Who likes to do business with a sourpuss?

Additionally, the *Parade* article points out, medical studies reveal that frequent and easy laughter has immense therapeutic value. Among the reasons why:

1) It helps heart action. Studies at Fordham and other universities show that the motion of the diaphragm during laughter sets in motion a physical chain of events.

One of the results is that the heart is stimulated slightly, causing a tiny increase in heart rate. Actually, this is good for you.

2) Digestion is benefited. Another research project shows that, when you enjoy a good occasional laugh at mealtime, gastric juices are stimulated to perform their functions more efficiently. The result: digestion is enhanced.

3) At times laughter helps even high blood pressure cases. Almost everyone realizes that stress is a factor in aggravating high blood pressure. Remove

(Concluded on Page 9, Col. 1)

Bryant Unveils New Gas-Fired Air Conditioner

Air-Cooled Unit Uses Absorption Cycle

INDIANAPOLIS — Unveiling of its new gas-fired air conditioner was the highlight of Bryant Mfg. Co.'s annual sales conference held recently at the firm's headquarters here.

During this meeting the merchandising and advertising plans for 1959 were presented to the distributor principals.

As part of a tour of Bryant's plant in Indianapolis, the distributors saw production equipment being installed and workers being trained to manufacture the new gas-fired unit.

"The introduction of the residential gas-fired air conditioner into Bryant's product line culminates over ten years of research on gas-fired residential cooling," said Samuel F. Shawhan, president and general manager.

"Consistent with the research policy of Carrier Corp., of which Bryant is an operating division, every conceivable design which used gas as the energy source was evaluated thoroughly before the decision was reached on a design approach for the residential market.

"This included an investigation of gas-engine driven compressors, steam jet units, absorption and adsorption cycles, and turbine-driven centrifugal compressors.

"Shortly after the merger of Bryant with Carrier in 1955, and recognizing the trend toward air-cooled and outdoor placement of units, development work was concentrated on an absorption cycle using ammonia and water as the refrigerant and absorbent.

"The unit which will soon go into production is entirely air-cooled, may be installed outdoors, is quiet and automatic in operation, and is practical for add-on application in conjunction with existing furnaces as

(Concluded on Page 4, Col. 3)

Union Demonstration Closes G-E Bloomfield Plant 2 Weeks Early

BLOOMFIELD, N. J. — General Electric Co.'s commercial and industrial air conditioning plant here was shut down March 16, two weeks ahead of the scheduled April 1 closing, because of union protest demonstrations.

On March 13, some 17 production workers, including union officials, all members of Local 442, International Union of Electrical Workers, chained

(Concluded on Back Page, Col. 2)

Marley Moves Into Air-Cooled Condenser Field

KANSAS CITY, Mo. — The Marley Co., manufacturer of water cooling towers, has announced its entry into the air-cooled condenser field.

New air-cooled condensers with nominal capacities from 15 to 100 tons (nine models) are being marketed by the company under its long-established trade name, "DriCooler."

In designing the DriCooler, Marley extends its engineering experience and research and development in industrial air-cooled heat exchangers to the air conditioning and refrigeration field, the announcement said, adding:

"As a result, the new Dri-Coolers embody many desirable features including ease and

(Concluded on Page 4, Col. 1)

Engineers Merge Smoothly; Contractors' Study Hits Snag

• • •

ASHRAE Consolidation Ahead of Schedule

LOS ANGELES—All phases of the consolidation of the industry's two engineering societies into the American Society of Heating, Refrigerating & Air-Conditioning Engineers is proceeding smoothly and ahead of schedule on all levels—national, regional, and local—top officials of the society told members at a regional meeting here March 13 and 14.

At a "workshop session" which closed the meeting, regional officers, local chapter officers, and a number of members of both societies discussed moves to be made to effect consolidation and program plans at

(Concluded on Page 33, Col. 1)

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NAPC-MCAA Committee Reports Impasse

NEW YORK CITY—An impasse over the basic organization structure of a combined association deadlocked and brought to an end efforts of a joint committee studying a proposed merger of the Mechanical Contractors Association of America, Inc. and the National Association of Plumbing Contractors.

The committee issued its final report to members of both associations on March 16. Discussion of the report is expected to be a prominent feature of the 70th anniversary convention of MCAA, scheduled for Washington, D. C. on April 29 to May 1, and the NAPC convention in Miami Beach June 1-4.

Final meeting of the committee was on Feb. 11-12. The meeting was scheduled to discuss membership qualifications, dues structure, and method of voting.

But when the impasse was reached over NAPC insistence on state associations as an in-

(Concluded on Back Page, Col. 1)

BEHIND PAGE ONE . . .

RESIDENTIAL Air Conditioning
2 Ex-District Office Men Prove What They Preached About How To Make a Profit 10

COMMERCIAL Air Conditioning
Flexible Ducts Blow Hot and Cold At New Jersey Drive-In Theater 32

- **'Sloppy Accounting Procedures'** Banker Tells Contractors That Their Books Don't Reflect True Condition 6
- **Military Standardization (5)** 18
- **Hydronics Research Points Way To Material, Labor Savings** 28
- **Technical Center** 'Can I Charge Liquid Into Low Side?' (3) 29
- **Air Distribution Requirements** 35
- **COMMERCIAL REFRIGERATION Section** Supermarket of Tomorrow ..... 25 What Is a Qualified Distributor? 26

Commercial Refrigerator Shipments For 1958 Top '57 Total by Almost 5%

CHICAGO — Shipments of commercial refrigerator equipment by members of the Commercial Refrigerator Manufacturers Association increased just a little less than 5% over the 1957 total, thanks to a booming fourth quarter, according to final figures on 1958 volume released by CRMA.

Ratio figures for the various classes of products sold by these manufacturers did not change too greatly from '57; most notable trends being the continued climb in popularity of multiple-deck open display cases, and an apparently steadying market for low temperature display cases.

The big increase in shipments in the last quarter—18.6% over the corresponding quarter in 1957, and the largest shipments in any quarter of 1958—was indicative of how commercial refrigerator business had improved after a slow first half of the year.

In the area of ratio by prod-

(Concluded on Page 35, Col. 2)

• • •

Distributor Sales Rise 10% In 1958

PHILADELPHIA — A 10% increase in total sales for 1958 over 1957 was reported by commercial refrigerator distributors to the National Commercial Refrigerator Sales Association.

Dollar net profits before taxes showed a gain of 7%.

Fourth-quarter dollar sales moved up almost 24% over the same quarter in 1957.

As of Dec. 31, 1958, inventories increased 9% over the same date in 1957 and accounts receivable jumped 16%.

OHI Publishes Boiler, Furnace Safety Standard

NEW YORK CITY—A safety and performance standard for the installation of residential oil-burning boiler and furnace units has been published by the Oil Heat Institute of America.

Printed in booklet form, it is known as the "B-58" Standard. Another standard, "B-59," will be published shortly by the OHI governing the installations of conversion oil burners.

"Publication of the new OHI standards is an important milestone towards adoption of a single universal code that would govern the installation of oil burners anywhere and would in many cases be the basis of local building or regulatory codes," the institution said.

The job of promoting the use of these standards throughout the United States and Canada has been assigned to OHI's Distribution Div. An Applications Committee to administer the project has already been formed.

Preparation of the B-58 and B-59 standards has been under the jurisdiction of a special OHI Standards Committee. Serving on the committee were representatives of Underwriters Laboratories, and manufacturers of oil burning equipment and accessories, and dealers.

Chairman of the committee is

(Concluded on Back Page, Col. 4)

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Airtemp Names New Independent Distributors In Chicago, Milwaukee

DAYTON—Announcement of the signing of new independent wholesale distributors for Chrysler Airtemp air conditioning and heating products in Chicago and Milwaukee has been made here by J. B. Ogden, vice president-sales.

Both firms will handle Airtemp's packaged residential and commercial equipment.

In Chicago, The Sampson Co. is the new distributor, while in Milwaukee the recently-organized McCarthy & Co., Inc., will take over wholesale distribution for the Airtemp line.

One of Chicago's oldest and largest wholesale distribution firms, The Sampson Co. was founded in 1921 by Peter Sampson, now chairman of the board. His son, Robert L. Sampson, is president.

The Sampson Co. handles 25 different product lines for homes, business, and industry. Its 200 employes serve nearly 4,000 accounts in and around Chicago, and its 1958 volume was $15,000,000, according to the announcement.

The company also has an extensive import business, primarily in electronic equipment from Japan.

R. L. Sampson announced the appointment of R. M. Hagan as manager of the company's air conditioning division.

McCarthy & Co. will distribute Chrysler Airtemp equipment throughout southern Wisconsin. The firm has 22 retail dealer outlets in the area. David M. McCarthy is company president.

Carrier Appoints Frank E. Purcell

SYRACUSE, N. Y.—Appointment of Frank E. Purcell as sales manager of packaged equipment for the Unitary Equipment Div. of Carrier Corp. was announced by Russell Gray, company vice president and general manager of the division.

F. E. Purcell

He succeeds Burton T. Kehoe who recently was appointed executive vice president of Colorado Research Corp., a subsidiary of Carrier.

Purcell, who has been sales manager of the national buyer department at Carrier since 1956, will be in charge of air conditioning and heating equipment.

Fedders 'Grass Roots' Service Meetings For Dealers Will Run Through May

MASPETH, N. Y.—A series of 58 "grass roots" service meetings, to be attended by approximately 3,500 dealer and specialist service personnel, has been scheduled by the Customer Relations and Service Dept. of Fedders Corp.

The meetings were started March 9 and will run through May 29.

The factory-conducted seminars for dealer servicemen is a departure from the previous practice of having regional meetings for distributor service departments who in turn would hold sessions with their dealers.

"By going direct to the dealer with our service story, we get right to the man who works with the units in the field—completely and rapidly," said A. F. Agovino, department manager. He indicated that distributors "will coordinate the meetings for us."

The sessions will be held either at the distributor headquarters, if facilities permit, or in local hotels or meeting halls, it was stated.

Travelling from Fedders' headquarters here for the meetings will be Fred Tiedeman, assistant manager; Silvester Thompson, field service manager; and Gerald Schweitzer, technical publications advisor of the Customer Relations and Service Dept. Fedders regional service managers will assist at the sessions held in their territories.

The schedule of remaining meetings is as follows:

Coral Gables, Fla., March 23; Clearwater, Fla., March 25; Jacksonville, Fla., March 26; Savannah, Ga. and San Antonio, March 30.

Charlotte, N. C. and Houston, April 1; Raleigh, N. C. and New Orleans, April 3; Decatur, Ga. and Lubbock, Texas, April 6; Birmingham and Wichita Falls, Texas, April 8; Nashville and Shreveport, April 10; Chattanooga and Oklahoma City, April 13; Knoxville and Dallas, April 15; Memphis, April 17; Washington, D. C. and N. Little Rock, Ark., April 20; Baltimore and Wichita, Kan., April 22; Philadelphia and Jackson, Miss., April 24; Norfolk, Va. and Kansas City, Mo., April 27; St. Louis and Richmond, Va., April 29.

Roanoke and Evansville, Ind., May 1; Cincinnati, Louisville, and Huntington, W. Va., May 4; Allentown, Pa., Indianapolis, and Columbus, Ohio, May 6; Lancaster, Pa., Chicago, and Pittsburgh, May 8; Minneapolis and Boston, May 11; Omaha and Providence, R. I., May 13; Peoria and New Haven, May 15; Detroit, May 18; Toledo, May 20; Cleveland, May 22; Albany, N. Y., May 25; Rochester, May 27; and Buffalo, May 29.

Additional meetings will be held in other areas, but dates have not been scheduled yet, according to Fedders.

Detroit ASRE Meeting To Feature Education

DETROIT—A "double header" program that includes a report on "Education in the Air Conditioning and Refrigeration Industry" and a "Quiz the Experts" session has been planned for the April 6 meeting of the Detroit Section, American Society of Refrigerating Engineers.

The educational report will be given by Frank J. Versagi, technical editor of AIR CONDITIONING, HEATING & REFRIGERATION NEWS.

He will tell of reader reactions to his award-winning series of articles, "Report on Education," which appeared in the NEWS recently.

Versagi also will serve on a panel of experts which will attempt to answer all questions from the audience.

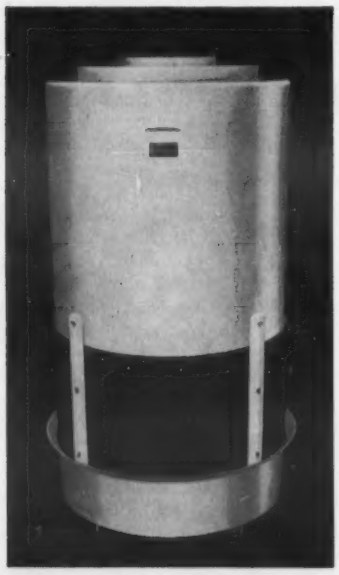
Other panel members will be Hugh Goslin, inspector, Dept. of Buildings & Safety Engineering, Detroit; S. J. Janczarek, Refrigeration Service, Inc.; Calvin Kleinschmidt, York Corp.; Ray Lee, Lee Equipment Co., Harold Perpich, Great Lakes Refrigeration Equipment & Service Co.; and Norman Suter, Norman S. Suter & Co.

C. H. Turnquist, instructor, Cass Technical High School, will act as moderator for the question period.

RATHER RASSLE A BEAR...OR A TIGER?

No matter which you choose – you lose! And – up to now – conventional cooling towers gave you just such a losing choice . . . no matter what tower you selected you had troubles to fight. Only Koch has done something about it!

NOW! KOCH JET COOLING TOWERS TAKE THE FIGHT OUT OF WATER-COOLED AIR CONDITIONING!



Eye-appealing, satin-smooth finish stays cleaner much, much longer!

Towers available in 3 to 25 nominal tons.

WRITE – RIGHT NOW! For complete information, "spec" sheets, etc.

DISTRIBUTORS! ATTENTION! A few choice exclusive distributorships are still open in certain major market areas. Contact us at once!

High-velocity, non-clog nozzles at the tower's top break down water droplets into *atomized* particles which, in their downthrust, create a continuous one-way piston action in displacing the air . . . drawing in huge quantities of air at the top . . . for a very high evaporative action. This speeds BTU rejection and eliminates wood slats and baffles which are found in most conventional towers.

✱NO RUST! ✱NO CORROSION! ✱NO CHEMICAL COLLECTION! ✱NO MOVING PARTS! ✱NO ELECTRICAL MALFUNCTION! ✱NO MOTORS, BELTS, PULLEYS, ETC.! ✱ **AND SO LIGHT** ONE MAN CAN LIFT A 7½-TON CAPACITY JET COOLING TOWER . . . AND INSTALL IT HIMSELF!

KOCH JET forced draft COOLING TOWER

Continuing progress through research

KOCH ENGINEERING COMPANY, INC.

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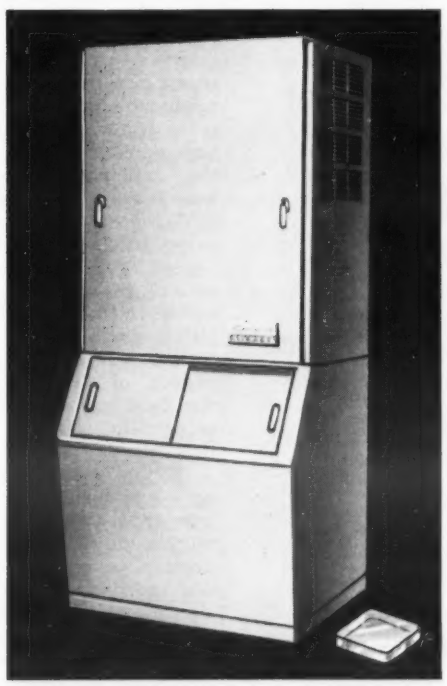
Sell increased output with capacity certified by Carrier...

Temperatures (° Fahrenheit)		Pounds of Ice Delivered Per Day	
		CHIPMASTER	
Water	Air	Model 26T6AC	Model 26T6WC
55	70	715	795
70	70	690	700
70	90	575	675
90	90	530	580
100	100	420	520
105	110	375	445

in the new High Production 26T Automatic Chipmaster



Here is a brand-new Carrier ice machine that produces crystal-clear chip ice—all your customers need—even at extremely high ambient air and water temperatures! The chart above shows the new Chipmaster's output at 105° water and 110° air temperatures, the maximum test load requirements of ARI Standard 810-57.

You can easily prove customer savings with actual production figures like these. What's more, Carrier—and only Carrier—certifies production in writing, based on temperatures prevailing in your area.

With the addition of the 26T, Carrier rounds out your icemaker line—gives you a model with the right kind of ice—cubes, crushed, chips or flakes—and the right amount of capacity for every prospect. With savings you can prove—and capacity certified in writing by Carrier, you're set for bigger sales than ever.

For complete information on the new 26T—and the full Carrier Icemaker line—write to Carrier Corporation, Syracuse 1, New York.

Carrier

AIR CONDITIONING · REFRIGERATION

Marley Air-Cooled Condenser--

(Concluded from Page 1, Col. 3)

flexibility of installation and all-season full performance.

"The new Marley DriCoolers are horizontal units with vertical, blow-through air flow from a single industrial type fan. This design eliminates fan wind-loading by adverse air currents and minimizes recirculation. Air turning vanes and supplementary hoods are never required, assuring unobstructed air flow and minimizing plan area requirements.

"All units have angularly mounted modular condenser coil sections forming a plenum chamber that equalizes air pressures over all areas of the coil sections — eliminates fringe areas of reduced heat transfer —'hot spots.' Turbulent air, moving at high velocity across against the angular fins creating efficient heat transfer.

"Additional advantages of angular coil mounting include improved refrigerant drainage and greater structural strength.

"Plate type fin coils with aluminum fins and small diameter copper tubes require minimum refrigerant."

DriCoolers are encased on four sides. Screens above coils and below fans add further protection and safety.

Optional automatic air modulation controls are offered for cold weather operation. No additional refrigerant charge, piping, or valves are required.

Structural members, panels, and screens are hot dip galvanized after fabrication. All units are factory assembled and tested for pressure tightness, operation, and internal cleanliness before shipment, it was stated.

Bryant Gas-Fired Conditioner--

(Concluded from Page 1, Col. 2)

well as with new Bryant furnaces," Shawhan continued.

Following completion of the initial phases of the project at Carrier's Research and Development Div. in Syracuse, prototypes of the gas air conditioner were sent to Bryant's engineering development laboratories at Tyler, Texas.

Based upon the successful performance of the prototypes in residential installations, Bryant proceeded on a more elaborate field testing program the following year, it was pointed out. As a result, Bryant started producing "hand-made" machines early in 1958, and in cooperation with gas utilities, 69 units were operated in residences in various parts of the country served by 42 different gas companies.

HIGHLIGHT of the three-day business conference Bryant Mfg. Co. held for its distributors was a display of the firm's 1959 product line. David W. Hoppock, vice president and general sales manager, explains the operation of the gas air conditioning unit to Bart Frary, Bryant-Frary Co., Rockford, Ill.

Based upon the results of the extensive field test program in 1958, several minor modifications were incorporated in the final design which will soon be in production.

"The Bryant gas-fired air conditioning system consists of two pieces of equipment," it was explained. "The air-cooled absorption refrigeration machine is designed for outside installation. It produces chilled water and is equipped with a pump which circulates the chilled water through the second piece of apparatus, a coil package within the home mounted in the furnace duct system.

"The equipment requires no cooling tower or water supply. The motors for the fan and circulating pump operate on ordinary 115-volt house wiring. The equipment can be adapted to all types of gases, and conventional cast iron burners and standard automatic controls are used. A conventional wall thermostat regulates cooling and heating."

The present model 450 is of 3-ton capacity. A larger model of the 450 machine will be field tested during 1959 and produced in 1960, the company stated.

"Bryant has appropriated in excess of a half million dollars for the tooling and the equipment required for the volume production of the gas air conditioner and approximately 75,000 sq. ft. of production facilities at the Indianapolis plant will be devoted to the new product," said Gordon N. Gray, vice president and manager of manufacturing.

"Although our production this year will be limited as the result of a late start, the manufacturing program is being given top priority and our volume should soon be geared to the anticipated rapid market acceptance of the new product."

Technical training schools are being held in Indianapolis for Bryant distributors and dealers, as well as for utility people involved in the application, installation, and sale of the gas air conditioner. The first school session of five days' duration was held late in February, with subsequent sessions scheduled through May 4.

"Bryant plans to sell the gas air conditioner through its regular distribution with much of the limited early 1959 production going to the gas utilities and distributors who participated in the 1958 field test program," said David W. Hoppock, vice president and general sales manager.

Sales through Bryant dealers will begin as rapidly as available production permits and dealers can be trained in sales, installation, and service. Distribution of the gas air conditioner west of the Rocky Mountains will be handled by the Day & Night Mfg. Co. and The Payne Co., also operating divisions of Carrier Corp.

In commenting on the 1959 outlook for the entire line of Bryant products, Hoppock told distributors that anticipated sales volumes appear to be in tune with the over-all improvements in the economy.

EVER REALLY EXPLORE INNER SPACE?

Inner space of copper Capillary and Restrictor Tubing, that is? Especially that used for instrumentation and controls? Kensico recently asked an independent consulting service to explore the inner space of its small-diameter, *precision-drawn* tubing in comparison with leading competitive products. Some mighty revealing discoveries were made by using *photomicrography!* Interested control engineers may obtain a set of these photomicrographs—or Free Flow Charts and engineering consultation—by simply calling, writing or wiring Gordon Edwards at the Mt. Kisco plant.

We also make hard and soft copper water tube . . . copper air conditioning and refrigeration tubes . . . copper tubing for propane gas lines, heat exchangers, automotive and industrial applications.

CAMBRIDGE, MASS. · BUFFALO, N. Y. · LINDENHURST, N. Y. · GOSHEN, N. Y. · ROSELLE, N. J. · PHILADELPHIA, PA. · PITTSBURGH, PA. · CLEVELAND, OHIO · DETROIT, MICH. · EVANSTON, ILL. · ST. LOUIS, MO. DURHAM, N. C. · FT. LAUDERDALE, FLA. · ST. PETERSBURG, FLA.

Kensico Tube
COMPANY INCORPORATED, MT. KISCO, N. Y.

SERVICEMAN Larry Capalbo gets demonstration from Robert Nissman, partner in Eastern Supply Co., showing how new "Ucon" 25-lb. service cylinder can be placed upside down for charging with liquid refrigerant.

OPENINGS in "ring-top" service cylinders for "Ucon" refrigerants provide easy access for wrenches, William Miller of Ansul Chemical Co. demonstrates for Lawrence R. Gelles, partner in Eastern Supply Co.

* * *

New Cylinder Design Improves Handling, Aids In Servicing

MOUNT VERNON, N. Y.—One of the first groups in the country to get a chance to inspect the new "ring-top" service cylinders devised by Union Carbide Chemicals Co. for its "Ucon" refrigerants were employes and customers of Eastern Supply Co., parts wholesaler here.

A special demonstration was arranged for the firm recently by representatives of Union Carbide and Ansul Chemical Co., which has become a national sales agent of "Ucon" refrigerants.

The "ring-top" feature, which is provided on the 25-lb. service cylinders, consists of an extension the same diameter as the cylinder which is welded to the top and ends in a heavy ring, according to the firm. There are two wide openings in the side of the extension to permit grasping the cylinder by the ring and to allow access to the cylinder valve.

Primarily, this feature was developed with the sole idea of making the cylinder easier to carry, but a number of unexpected advantages were soon discovered.

The need for a valve protective cap is eliminated, for example.

Such cylinders can be stood upside down while charging a system with liquid refrigerant without the need of a special holding stand. The charging hose can be left wrapped around the valve inside the extension between jobs.

"I think it's a good thing, a terrific idea," commented Robert Nissman, who with partner Lawrence R. Gelles, operates Eastern Supply.

"It's easy for carrying, and it eliminates troubles with valve caps," he adds. "We take the caps off regular cylinders when we send them out, but we wind up with bushels of them."

Similar views were voiced by Larry Capalbo, serviceman: "You know what I like about it; you can turn it right upside down when you want to charge with liquid. And I like this idea of carrying it. Also, you save the valve if you accidentally drop the cylinder."

Lehigh Appoints Richard F. Burke

EASTON, Pa.—Lehigh Mfg. Co. announced the appointment of Richard F. Burke as national sales representative for the company's new line of liquid receivers and receiver-condensers for refrigeration and air conditioning systems.

R. F. Burke

The new line, said to include many design innovations engineered to meet the original equipment needs of refrigeration manufacturers, is already in volume production on all sizes up to 12-in. diameter.

Burke, who was formerly general sales manager of Tube Manifold Corp., has set up headquarters in Buffalo.

New Cleaver-Brooks Canadian Plant Set For Spring Output

MILWAUKEE—The new 25,000-sq. ft. Cleaver-Brooks plant in Stratford, Ont., Can. has been completed, E. H. Wegner, Cleaver-Brooks vice president in charge of manufacturing, revealed in a recent announcement.

Cleaver-Brooks, manufacturer of packaged boilers, initiated the Canadian operation last August as part of a $2 million expansion program which included doubling of the firm's eastern manufacturing center at Lebanon, Pa., and modernizations of its plants in Milwaukee.

Wegner said that machinery will be moved into the new location for several weeks with production starting in early spring.

Redmond
MICROMOTORS
One of largest stocks in the world!
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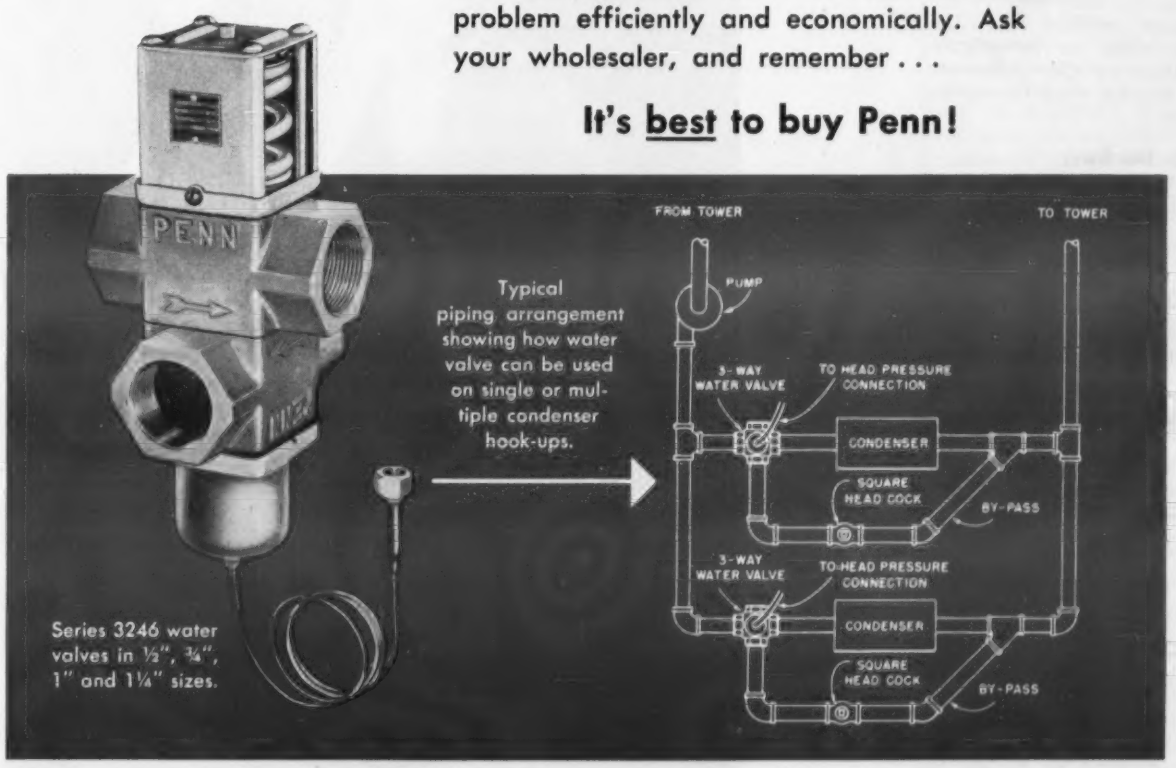
HOW
you can assure efficient use of cooling towers!

Penn's 3-way water valve maintains uniform refrigerant head pressures regardless of surrounding air temperature and humidity at the cooling tower. Thus, water-cooled refrigeration and air conditioning equipment will always operate at full capacity and maximum cooling efficiency. In addition, this 3-way water valve reduces compressor lubrication problems and lowers maintenance on nozzles and wetting surfaces in the cooling tower. Try the Series 3246 on your next cooling tower job . . . it will solve the problem efficiently and economically. Ask your wholesaler, and remember . . .

It's best to buy Penn!



PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Banker Scores 'Sloppy Accounting Procedures' Which Don't Tell Contractor's True Condition

PEBBLE BEACH, Calif.— Contractors were genially buffeted about recently by a bank official for their accounting practices.

The speaker was N. C. Luhmann of San Francisco, vice president of the First Western Bank & Trust Co. He addressed the second annual convention of the Refrigeration & Air Conditioning Contractors Association of Northern California, affiliate of national RACCA, on the topic "The Bank Looks at the Contractor When Asked for Capital."

What the bank saw was usually not good, he declared, largely because of sloppy accounting procedures which do not reflect the true condition of the refrigeration and air conditioning contractor.

California bankers held a group meeting recently where the agenda came to the topic of commercial refrigeration, air conditioning, heating, and ventilating, for discussion, he recalled.

How Banker Tears Statement Apart

The response was: "Hell no. Let's talk about something else."

Luhmann continued with these comments:

A $2 million statement is given a banker by a firm wanting money. The banker proceeds to tear it apart.

Receivables: He has to know what is current, and what is past due.

The banker will say: "Why don't these people go into detail on the receivables?"

Finance reserves: They are deleted out of the statement because they are not cash.

Payables: All showed current; they all were not.

Luhmann pointed out the bank is going to investigate this feature of the statement also, so why not show the status in detail?

There Is No Easy Way To Borrow Money

"We like to see the profit and loss statement broken down. There is no easy way to borrow money," Luhmann said.

Money on inventory: There is the manufacturer's repurchase agreement if the buyer gets in trouble.

Retail-wise the contractor is using the banks of his customers.

With leasing companies entering this business, and with supermarket chains, the contractor is using other people's banks.

On modernizing loans, the bank has no recourse on heat pumps and air conditioning equipment.

Talking of sales contracts where the amount of deficiencies are limited, Luhmann said repossession is not the answer. The resort must be to law to collect the balance owing.

Banks don't like the prospect of an owner sitting back and saying "sue me," he observed.

For future programs Luhmann suggested a panel of bankers, with the refrigeration contractors throwing up the questions. "We will answer them," he said.

In the question-and-answer period he was asked about leasing companies.

"A leasing company is a broker who knows how to talk to a bank," he said.

From the floor came the comment that "Unless we can come up with an answer to contingent liability it is going to hurt sales."

Luhmann's answer: "A lease is not going to take the place of a sale, writing the cost of a lease off monthly because it is not a fixed liability.

"Leases can be handled only where applicable."

Asked about the 10% withhold, Luhmann said that was done on furniture but is not done now.

Asked what the percentage of repossessions are compared with other industries, Luhmann said: "You are fantastically good. Nobody believes it."

Asked who in the banking business has to be sold on this industry, Luhmann replied: "All levels in banking."

Luhmann's talk was one of several packed with information important to the operation of a sound contracting business.

A. L. Hanson of Los Angeles, vice president of National Refrigeration Mfg., Inc., speaking on "How To Make Money Out of Your Service Department," first proved his point by stating that his company was actually making good money out of service.

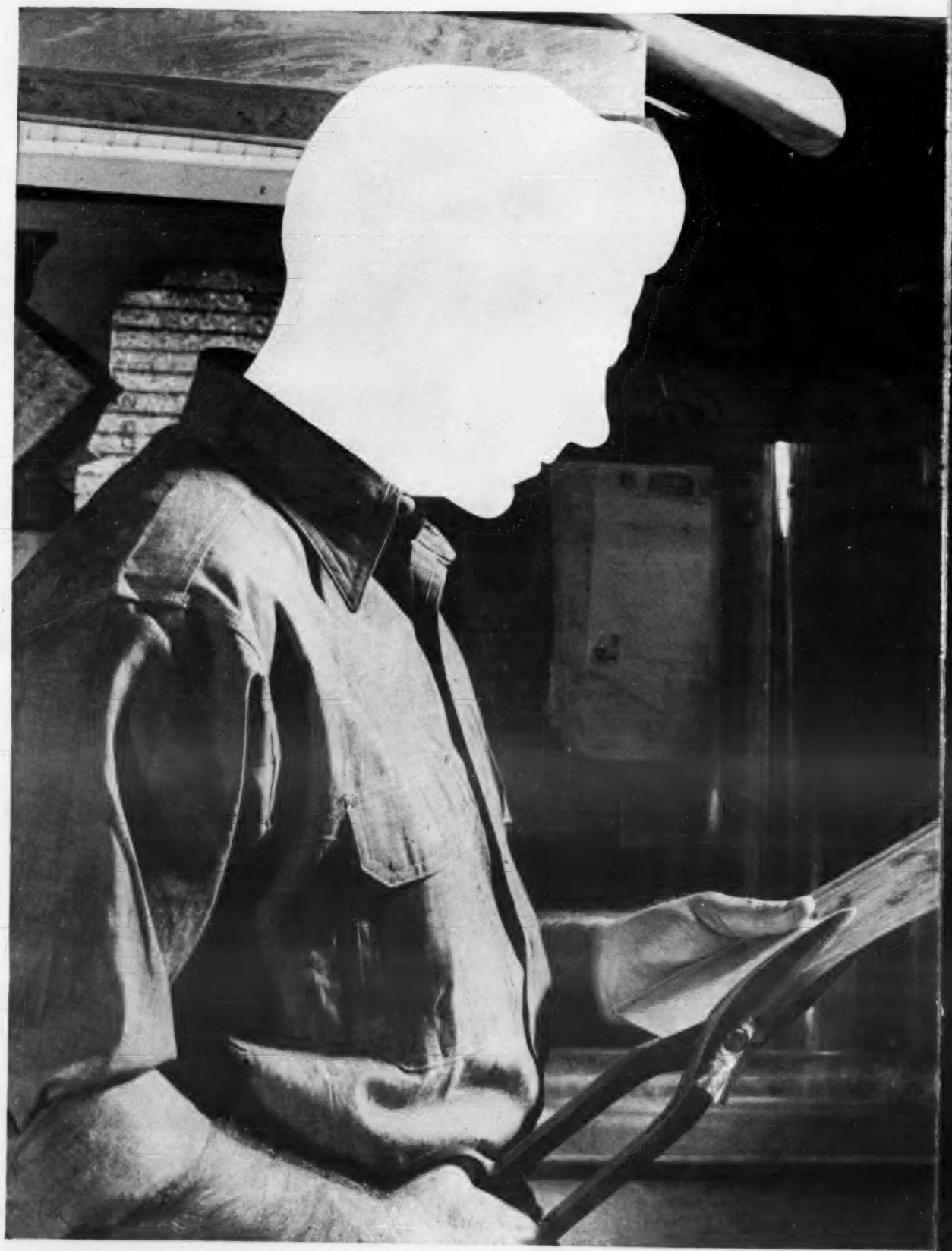
"Four basic affirmations by the contractor are necessary before service can be profitable," he said.

"(1) I must believe service is a profitable function of my business; (2) I must have a competent service supervisor with full authority to act, reporting directly to me; (3) I will provide the supervisor with the necessary tools; (4) I will establish a sales program featuring service."

Charles Scatena of Scatena York Co., San Francisco, in a talk on "Good Business In Contracting," reviewed the large number of jobs coming up in northern California for 1959, and prophesied a profitable year.

KENNETH ZAPPETTINI of San Francisco presents to Jack Lang of San Rafael a plaque for his outstanding service as president of Refrigeration & Air Conditioning Contractors Association of Northern California during 1958. Zappettini, at right, is president for 1959.

Substituting for George Howe of Chicago, Don Kissell of Los Angeles, a director of national RACCA, gave the report Howe



was scheduled to give as chairman of the national Manufacturers and Wholesalers Committee.

Howe's report said: "What we can do depends on the activity of local associations."

Howe asked RACCA members to send him examples of direct sales by manufacturers, and direct sales by wholesalers, so his committee may be fully advised of the present distribution process in the industry.

Contractor-Manufacturer Relationship Discussed

Robert B. Holland of San Mateo, president of Robert B. Holland Co., talked on the subject: "The Manufacturers' Representative Looks at Our Business."

Discussing the relationship between the contractor and the manufacturer, Holland stated that often the manufacturer's representative assisted in the design of equipment, then never heard from the contractor. He outlined his company's policy in direct sales to consumers, although stating that most of his business was through contractors.

Ross DeVoe of Linford Air & Refrigeration, Oakland, said heat pump sales really have become quite important and are on a steady incline, in his talk on "Heat Pumps Mean Refrigeration Business."

What Is Needed To Get Experienced Trainees

Under the topic "What Your Industry Must Offer To Get Experienced Trainees," Henry Guilmette of San Francisco, Pacific Scientific Co., gave a summary of what the training program needs for improvement.

Guilmette is one of two instructors for the RACCA-sponsored refrigeration apprentice classes in San Francisco.

M. Maroni Smith of San Francisco, attorney, and executive secretary for RACCA of Northern California, spoke on "Important Tax Changes."

Losses can be carried back three years in making up income taxes, he noted. This period used to be two years.

Earlier, Smith reported the Refrigeration Joint Conference Board of San Francisco made a spot survey to determine who is doing refrigeration work.

He said the survey showed that electrical contractors, sheet metal contractors, and operating engineers have been "invading" the industry successfully.

It was concluded refrigeration contractors have not done a good job in public relations of selling themselves to the public.

In connection with "encroachment" by other crafts, it was pointed out national RACCA President Charles L. Walling had met with Secretary Johns of the San Francisco metal trades council.

One suggestion resulting was to make up and distribute cards listing fair refrigeration shops, the convention was told.

Another project under consideration is placing of a classified ad listing in the next telephone book showing all contractors belonging to RACCA.

This will help offset the situation now existing which is the shop with the least investment has the largest telephone classified ad, it was stated.

Board activity has been instrumental in getting three firms to obtain state contractor's licenses, Smith reported. Six contractors have signed union contracts because of board efforts, he said.

There has been some "expulsion" of members by the United Association local in San Francisco, Smith stated.

The board aided by spending money to get qualified instructors for the apprenticeship program, he added.

Regarding machinists and electricians doing refrigeration work, the board approached the "Fan Man" only to find electrical work done by RACCA members is greater than the amount of refrigeration done by electricians.

San Francisco Fire Code Proposal Causes Concern

Smith said a proposed San Francisco fire code creates industry problems which caused 10 affected crafts to meet in the office of Associated Plumbing Contractors of San Francisco.

For the use of any "open flame" the new code would impose an inspection, a permit, and a man to stand by for 30 minutes after use of the flame ceased.

This, Smith said, would require issuance of 10,500 fire permits a day, since data presented at the meeting showed a total of 2,100 mechanics burning an average of five times a day.

Apprenticeship Program Reviewed

Kent Shaalman of Nelson-Kent Refrigeration reported on the refrigeration apprenticeship program in San Francisco.

With the help of Kenneth Zappettini, Shaalman said the program made more progress during the year just past than for the previous two years.

The industry is beginning to realize the benefit of a strong apprenticeship program, Shaalman said.

"It is admitted unless we have better apprentices we will increase the number of back door operators." In the San Francisco area we need more help in improving the apprentice system, Shaalman said.

The San Francisco Joint Apprenticeship Committee has opened the door to other counties, hoping these outlying areas will eventually set up their own refrigeration apprenticeship programs. At present San Mateo and Marin counties are sending apprentices to the San Francisco classes.

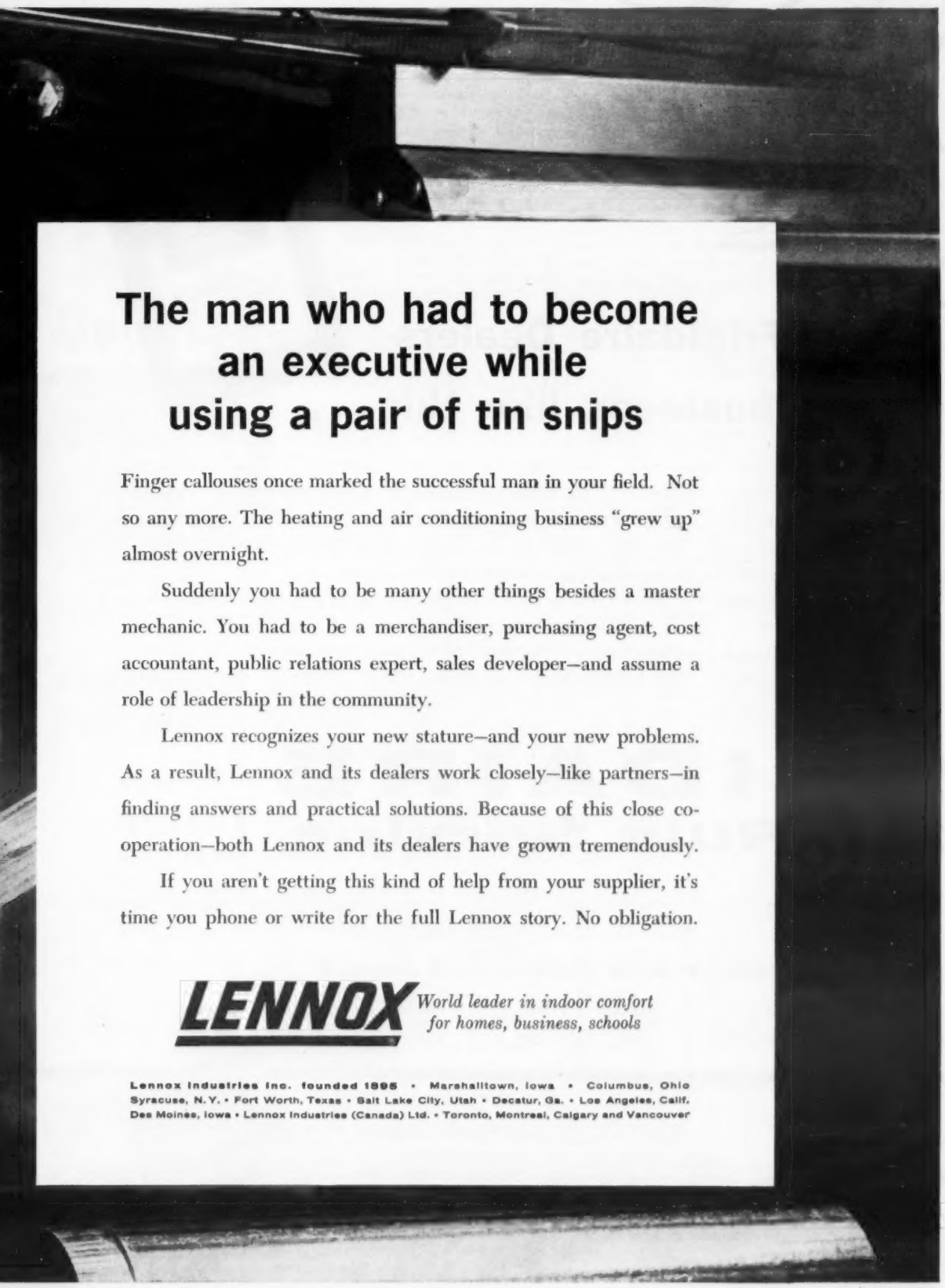
National RACCA President Walling, of Los Angeles, said the community of interest, regardless of fields of specialization, that binds refrigeration contractors together is the refrigeration cycle.

He emphasized the strong national RACCA program which has the sole purpose of getting benefits for the group.

Many benefits Walling listed have been accomplished in areas where strong organizations exist and real effort has been put forth, he said.

Officers of the northern California association elected for 1959 are:

President, Kenneth Zappettini of Donnelly & Zappettini, San Francisco; vice president, Dolph Lerza of Lerza Refrigeration, Redwood City; secretary, Kenneth Morris of Power Refrigeration, San Francisco; and treasurer, W. W. Baldwin of Refrigeration Engineering Co., Sacramento.


The man who had to become
an executive while
using a pair of tin snips
Finger callouses once marked the successful man in your field. Not so any more. The heating and air conditioning business "grew up" almost overnight.
Suddenly you had to be many other things besides a master mechanic. You had to be a merchandiser, purchasing agent, cost accountant, public relations expert, sales developer—and assume a role of leadership in the community.
Lennox recognizes your new stature—and your new problems. As a result, Lennox and its dealers work closely—like partners—in finding answers and practical solutions. Because of this close co-operation—both Lennox and its dealers have grown tremendously.
If you aren't getting this kind of help from your supplier, it's time you phone or write for the full Lennox story. No obligation.
LENNOX
World leader in indoor comfort for homes, business, schools
Lennox Industries Inc. founded 1895 • Marshalltown, Iowa • Columbus, Ohio
Syracuse, N.Y. • Fort Worth, Texas • Salt Lake City, Utah • Decatur, Ga. • Los Angeles, Calif.
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BEAUTIFUL...but Frigidaire Dealers know it won't build business like this...

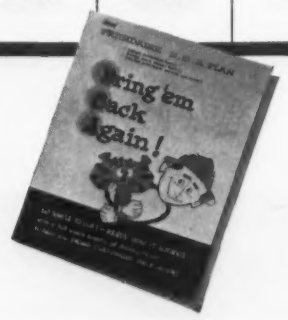
The Frigidaire Award of Merit is an award that's as business-wise as it is attractive. You start to benefit by it even before you receive it! Here's why—The only way a Frigidaire Servicing Dealer can get an Award of Merit is to *earn it*, by meeting and maintaining eight important service standards. Automatically, this means an improved service operation for the dealer . . . usually at lower cost! The better the service, the more satisfied the customers . . . the better a dealer's community reputation for service . . . the better his chances of making repeat sales! What's more, after the presentation, the Frigidaire Award of Merit gives the dealer an advertising, promotion, and sales tool his competitors can't buy or hope to match.

How can *you* earn the Frigidaire Award of Merit? *You start by calling the Service Department at the Factory Branch or Distributor's Office listed on the next page. Or write Frigidaire Service Department, Dayton 1, Ohio.*

FRIGIDAIRE
Golden Rule Service

BRING 'EM BACK AGAIN—
FOR SERVICE AND SALES!

Frigidaire Service promotional programs are designed to help you keep your customers yours! One such low-cost campaign is the current "Bring 'Em Back Again" Mailer Series—that tells them where to get service in a hurry—reminds them to see you first when it's time for a new appliance.



Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

the stress, and there's an excellent chance that blood pressure will drop.

One series of tests provides evidence that during and after laughter blood pressure decreases slightly. These studies and others also show that, when you laugh, blood circulation is stepped up.

This, in turn, means that organs like the liver and spleen receive an increased blood supply. Thus, they function on a slightly higher plane of efficiency.

4) Tension is released. Laughter, of course, relaxes you. It "unwinds" you. It makes you feel good all over.

Laughter serves as a release. In laughter, you "loosen up" (stout people shake all over, they're so loose), get rid of stored stress.

Thus laughing has a restorative quality. Its positive effect on your muscles and central nerve system prepares you for future stress. In short, laughter prevents you from being as tight as a violin string all the time. This tension-releasing effect has been observed in 95 out of 100 persons.

5) You get rid of hostilities. Laughter is most important, perhaps, in the area of emotional well-being. After all, it's perfectly normal to feel hostile toward someone or something. Life is full of situations in which hostility is a natural component.

Laughter helps you get these hostilities off your chest. It helps you to establish a perspective, to set things right within your own psychological framework.

As the "Dope" logotype has averred for—lo! these many years:

Learn to live and laugh
And thus delay your epitaph.

'Look' Looks at Us

In a recent issue *Look* magazine issue the challenging statement: *"The Russians are trying to turn our best weapon against us.*

"What is that weapon? It is mass production by big integrated industries—fast, efficient, economical. This is our greatest asset in a Cold War which has become an economic struggle. It is the source of our strength and the basis of our position as a world power.

"But other countries, especially the Russians, are imitating our great integrated productive industries as completely as possible. For our big corporations they substitute gigantic trusts and combines.

"It would be one of the ironies of history if, while the Russians integrate their industries to achieve lower production costs, we turned in the other direction and weakened the ability of our industries to compete in world markets by making them smaller and less integrated.

"No longer do our big producers find most of their competition among other American companies. Increasingly, American industries derive more and more of their business from overseas. Of the largest, several now obtain from 40% to 70% of their income from operations in other countries.

"Among those U. S. industries selling widely overseas are the makers of electrical equipment. Few have done more to make the comforts and conveniences of life widely available. Their radios, refrigerators, washers, and dozens of other products have brought better living to Americans and many other peoples world-wide.

"Hence in America the amount of electricity used has roughly doubled every 10 years. The investments required to generate it, and to provide appliances to use it, have gone up in proportion.

"As a result of the billions that have been spent to research and develop such electrical equipment, the householder who worked 580 hours to buy a refrigerator in 1931, had to work only 188 hours to buy one in 1958. And the same is true of virtually all other electrical appliances.

"Yet despite its rapid growth, and the constant increase in the invested capital required by the electrical industry, there are more small electrical suppliers today than there were 10 years ago.

"This demonstrates the wealth-generating attribute of big business, supporting and energizing a vast and always increasing host of small businesses.

"In the light of these facts, it is time to re-examine the credo that bigness means monopoly and higher prices. In America, bigness has meant just the opposite. It has raised our living levels year by year. And now when we need it most, we find that bigness—with its resulting efficiency and economy—is also the armory of our defense.

"If at this juncture we decide to stifle bigness and efficiency, we can be sure that the Russians will not. Nor will our other competitors in world markets.

"Such a policy could result in the loss of our world business, a drastic lowering of our standard of living, and our inevitable decline as a world power.

"We have plenty of checks today against any bad effects of bigness . . . such as exorbitant profits. What we should be more concerned about is whether our industries will stay strong enough to meet tough foreign competition in world markets and make any profit at all.

"They will, if they are able to keep their prices low enough. And the only way they can do this and still pay our American workers the high wages they should get is to use our mass production weapon to the utmost.

"If in this crisis we decide to go the other way—if we force big industries to split themselves into smaller, less efficient units—only three more words remain to be written.

" 'We've had it.' "

Out of Our Mailbag

Refrigeration Supplies, Inc.
Cleveland, Ohio

Editor:

You might like this one, Mr. Taubeneck—

"SAVILLE, DER DAGO TOUSSIN BUSIS INARO. NOJO! DEMIS TROUX SUMMIT COUSINS AND SUMMIT DOUX."

Translation:

"Say Willie, there they go, a thousand buses in a row. No, Joe, them is trucks, some mit cows and some mit ducks."

I don't know the source. It could be Brooklynese, or just any local high school. If you can use no credit is necessary.

ROD O'FLAHERTY

Mesa, Arizona

Editor:

I have another Crazy Number Puzzle:

Three men went to a hotel and each rented a room for the night. The clerk charged each of them $10.00. After they had gone to their rooms the clerk decided he had charged them too much, so he gave the Bellboy $5.00 to divide between the three men.

As he went upstairs he thought it would be a little hard to divide five one dollar bills evenly, so he gave each man back a dollar and put the two dollars left, in his pocket.

It cost the three men Thirty dollars for the rooms, but minus the Three dollars the Bellboy gave back it only cost Twenty-Seven dollars. Twenty-seven dollars plus the two dollars the Bellboy put in his pocket amounts to Twenty-nine dollars. Who got the other Dollar???

Hope you can use this in your column.

BETH BAILEY

Ansul Announces 3 Promotions In Sales Organization

MARINETTE, Wis. — Ansul Chemical Co. has announced three promotions in its sales organization.

Jay H. Jarret, former refrigeration sales manager in Ansul's mid-continent region, has been named assistant to Sales Vice President L. C. McKesson.

Richard W. Drebus is now director of marketing and administrative services in the company's sales division. Edward A. Beacham has been selected manager of refrigeration sales development.

Jarret will be in charge of three sales staff departments: Sales analysis and control, sales coordinating services, and refrigeration sales development, it was noted.

Drebus will be responsible for Ansul's special hazards department, marine department, fire equipment sales development, and national accounts group. He was formerly manager of sales administrative services, according to the announcement.

Beacham joined Ansul in 1956 as assistant manager of new products in refrigeration sales development.

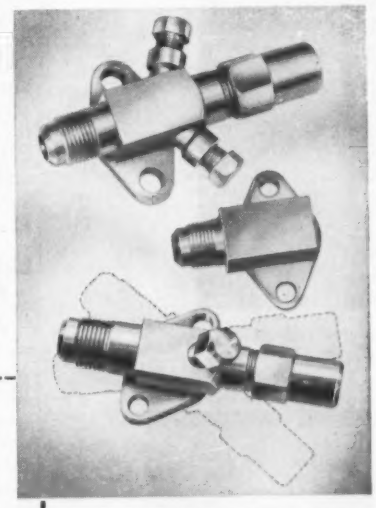
DOES YOUR APPLIANCE CARRY THIS

Seal of Quality?

★ The motor used in this equipment is protected against overloads, low voltage, over-voltage with a Mighty Mite Thermal Protector ★

MECHANICAL INDUSTRIES PRODUCTION CO.
223 Ash Street • Akron, Ohio

COMPRESSOR PAD VALVES and PAD FITTINGS
STATIONARY OR SWIVEL TYPE
Made in 3 sizes with 1⅛—1¾ and 2¾ Bolt Centers



Swivel Pad Valves may be set at an angle to correspond with tubing . . . Ideal for Automotive Air Conditioning Systems where space limitations exist.

All Pad Valves feature the Primore exclusive, a specially designed flange with a high unit pressure seal-off pad.

Write for illustrated catalog.

Made in all standard Flare and Sweat sizes.
Single or double ¼" Flare or ⅛" Pipe Gage Connection.
Precision manufactured Hydrogen Brazed Steel construction cuts cost.
Other Primore Valves available: Base, Angle, Receiver, Rotalock, Breakaway.

Primore Sales, inc.
2460 S. Main Street • Adrian, Michigan
REFRIGERATION designing sales engineering

Make-Shift Parts never earned a Frigidaire AWARD OF MERIT!

An adequate inventory of precision-built Frigidaire parts is a requisite for an Award of Merit—what's more it is a necessity for efficient service and assured customer satisfaction! For information on any phase of the Frigidaire Golden Rule Service program, call or write:

FRIGIDAIRE SALES CORPORATION OFFICES

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North Kansas City
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NEW YORK 19, N. Y.
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GM FRIGIDAIRE
Backed by General Motors
Frigidaire Service Department
Dayton 1, Ohio

Practice Makes Profit

2 Ex-District Office Men Prove What They Preached About the Residential Market

By C. Dale Mericle

ARDMORE, Pa.—Specializing almost 100% in residential air conditioning, the two partners who operate Jones-Wood Air Conditioning here are proving that what they preached to dealers when they were district men for Carrier Corp. can be practiced profitably.

Since March 1, 1956, when George P. Jones and Robert P. Wood went into business for themselves with eyes on Philadelphia's famous and wealthy Main Line, they have installed 201 air conditioning jobs (as of Feb. 23, 1959), and 191 of these went into residences, at least 85% of which were existing homes.

It's been a profitable venture, too, although the firm is admittedly suffering the financial growing pains that beset any young organization which is expanding rapidly.

At this moment the company is winding up its third move in three years. Working first from their own garages, Jones and Wood soon leased a 12 by 15-ft. office in Ardmore, which is the trading center of the Main Line. Next they acquired space in an old ice house for shop facilities. Now they've taken over several thousand more square feet in the ice house for offices and greatly enlarged work space.

Is the residential market really that good?

It obviously seems so to Jones and Wood, who have been making mch progress without the benefit of exceptionally hot summer weather.

"And if this summer should be a really hot one, the industry will come nowhere near meeting the demand," Jones believes.

Jones and Wood should know what they're talking about, both having joined Carrier back in 1948 as young men. They're still young, compared to many contractors. Jones is 34, Wood, 33.

After jobs in various Carrier field offices, Jones wound up as Residential Equipment Manager in the Philadelphia district where much of his time was devoted to training dealers, and not only Carrier's, for he was active in the local Electrical League's contractor educational programs.

Wood came to the Philadelphia district as Carrier's service supervisor where he found that while residential equipment represented a disappointingly small percentage of sales, it required a disproportionately large amount of service because dealers weren't sizing and installing systems properly.

It was partly the conviction that most dealers weren't making the most of possible sales approaches to the residential market and also weren't putting in jobs as well as they might that led Jones and Wood to try it themselves. With virtually no exceptions these partners have introduced little that was new in tapping the Main Line residential market potential; they're simply doing what they had long advised other contractors to do.

"Allow me to recommend them to you."
HAVE YOU SEEN THE NEW BABY IN YOUR NEIGHBORHOOD?
Your Comfort the Year Around Is Our Baby.
We Have Just Installed One of these "Babies" at Your Neighbor's Home
If you Would Like to Have a Free Estimate on an Installation for Your Home Just Phone
Carrier MI 9-9360 Carrier
JONES-WOOD AIR CONDITIONING
39 E. Lancaster Ave. Ardmore, Pa.
"Weathermakers to the Main Line"

SENT to neighbors of new customers, this eye-catching blotter has led to additional sales for Jones-Wood Air Conditioning, which "uses the user" extensively in creating residential air conditioning sales in Philadelphia's wealthy Main Line district.

Acquired Mailing List Before Setting Up Business

One of the very first things they did, even before actually setting up their business, was to spend $105 for a mailing list that showed there were 3,844 persons worth $50,000 or more living in the Main Line district.

Various mailings to this list developed a number of prospects. Newspaper and "yellow page" advertising have been used also to a considerable extent.

Most effective approach, however, has been the old reliable "use the user" technique, but obviously a firm starting from scratch requires time to build up a list of satisfied (or even unsatisfied) customers. Jones and Wood did benefit from leads supplied by Carrier and Peirce-Phelps, Inc., the distributor.

List of Users Aids Salesmen

As installations went in (there were 43 in 1956) a list of users was soon developed. An actual list of the firm's customers is used in selling, the list showing each individual's name, address, telephone number, model numbers of equipment, and size of the job in tons.

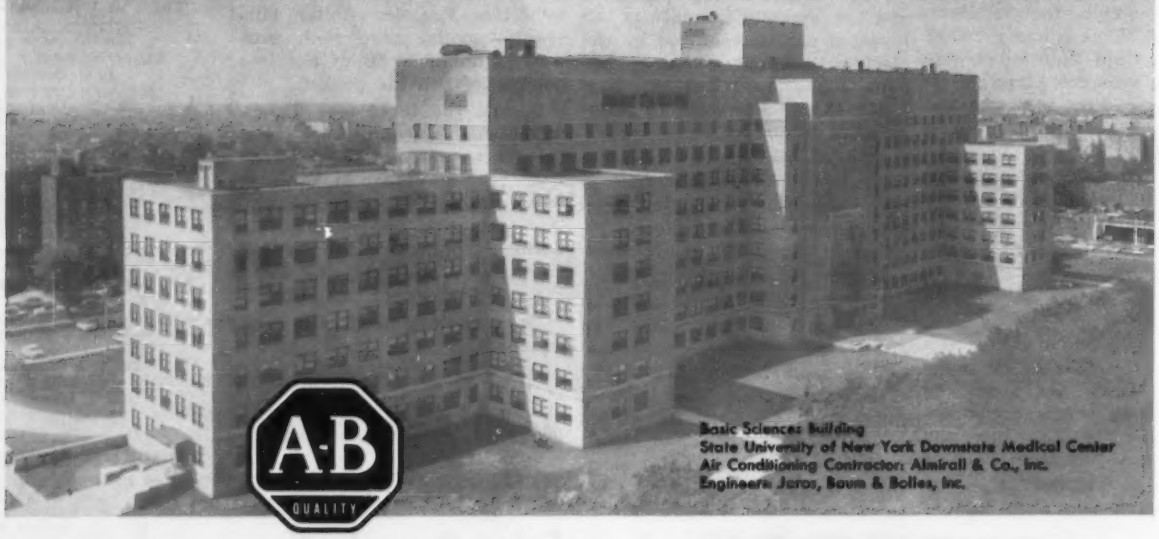
Prospects are invited to select any names they wish to phone or visit to check on the claims of Jones-Wood Air Conditioning.

"Usually," comments Jones, "just inviting prospects to phone our past customers is a convincing sales argument, but a number actually do make such calls."

The list is not rigged, Jones claims, for it includes every installation the firm has made, and not every single customer

NEW AIR-CONDITIONING SYSTEM

...and again it's Allen-Bradley Trouble Free Motor Control!

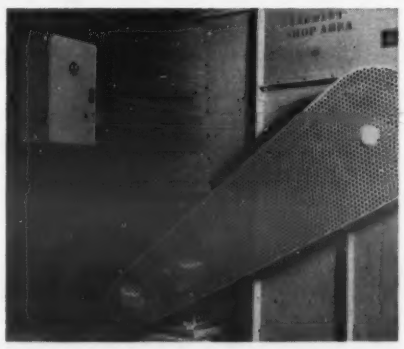


Basic Sciences Building
State University of New York Downstate Medical Center
Air Conditioning Contractor: Almirall & Co., Inc.
Engineers: Jaros, Baum & Bolles, Inc.

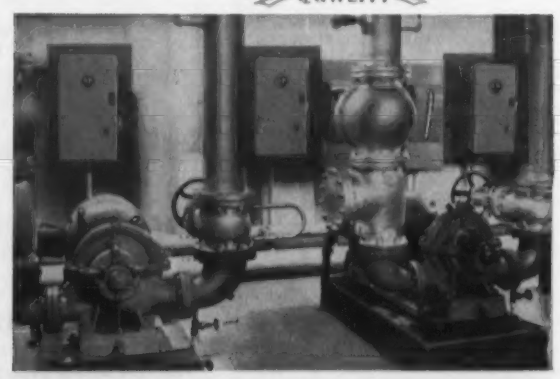
Consulting engineers—the men who *know* the importance of reliable performance—prefer to see Allen-Bradley motor control on *all* their jobs. Here's why: The simple solenoid design—exclusive with A-B in all starters up through Size 8—has only ONE moving part. This assures *years* of trouble free operation. A-B starters also have maintenance free, double break, silver alloy contacts and permanently accurate overload relays. All these features guarantee "user" satisfaction.

Allen-Bradley Co., 1313 S. First St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

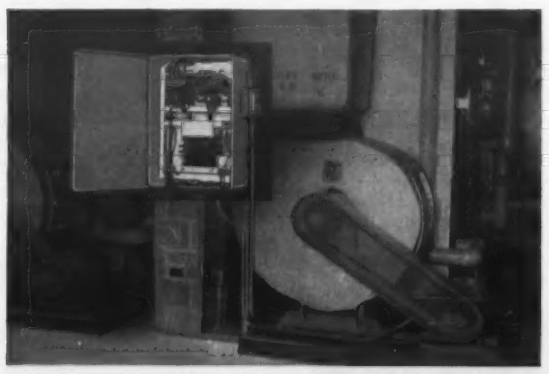
ALLEN-BRADLEY
MOTOR CONTROL
QUALITY



A-B Bulletin 646 manual reduced voltage, autotransformer starter for a 7½ hp fan motor.



Three A-B Bulletin 646 manual reduced voltage autotransformer starters used with the 50 hp condenser water pump motors.



One of three A-B Bulletin 746 automatic reduced voltage autotransformer starters for the supply and exhaust fan motors.

is completely satisfied, he admits.

"Seems like there's always one or two customers a year who just can't be completely satisfied," Jones says.

This will come as no surprise to most contractors. Sometimes the equipment may be at fault, or the installation, but more frequently it's a case of running into one of those impossible-to-please individuals.

Even here, though, Harry A. Fey, Jr., sales manager of the company, can cite one instance where a prospect did phone a somewhat dissatisfied customer (an acquaintance) in Fey's presence and after a 25-minute conversation put down the phone and immediately signed the order.

Mailing Goes To Neighbors of Users

Very likely, the practice of listing even not-so-happy customers is so unusual as to be quite disarming to the prospect.

The use-the-user sales method is also employed to good advantage in approaching neighbors of Jones-Wood customers. As soon as a job is completed, a mailing is sent to everyone else in the immediate neighborhood, the names and addresses being found in a "criss-cross" telephone directory which lists subscribers by street numbers.

These mailings feature the famous "Bannister Baby" pictures on a blotter, the envelopes having a large square window to show the baby picture. Copy on the face of the blotter reads:

"Have you seen the new baby in your neighborhood? Your comfort the year around is our baby. We have just installed one of these 'babies' at your neighbor's home. If you would like to have a free estimate on an installation for your home just phone."

Company name, address, and phone number are listed along with the firm's slogan: "Weathermakers to the Main Line."

A business reply card is also enclosed in the envelope.

The blotter has space for naming the customer, but Jones-Wood has found that most of them are reluctant to have their names used in this way, so it's omitted. There's been no such reluctance, however, in permitting Jones-Wood to include the name in its over-all customer list.

Firm Wastes No Time In Submitting Proposal

When the firm convinces a prospect that it should at least be allowed to bid on a job, it wastes no time in submitting a proposal.

"We get proposals out within three days of making the survey," Jones explains, "and often we have to mark time while waiting for other contractors to bid on the job."

Jones-Wood has long since done enough jobs to permit quick but accurate estimates of installation costs.

"We know how much a foot it costs to run piping, ductwork, etc.," Jones explains.

A complete price list of all equipment and accessories like electrostatic precipitators, humidifiers, etc., is provided in the sales brochure featuring the customer list, in addition to a map showing the location of all the company's installations, a list of reasons for not oversizing equipment ("which was a serious problem until a year or two ago," explains Jones), and other pertinent material.

What are some of the other talking points Jones-Wood employs in its sales approach to prospects?

Besides the partners' long experience with a national manufacturer, the list of satisfied customers, and speed in getting out the proposal, there are many additional ones.

Dependable Service at All Hours Emphasized

Dependable service at all hours is emphasized, for example.

"We suggest that prospects telephone us at 1 a.m. Saturday or Sunday night. They don't have to say anything, just see if they get an answer," Wood says.

A telephone answering service is used, of course, but the firm actually does perform service on a 24-hour basis.

Assuming full responsibility for the installation is another good sales point. The firm has its own sheet metal shop and refrigeration mechanics, and even keeps a carpenter on its staff year-round for cutting holes, and, much more important, properly patching and furring afterwards.

Electrical work is sublet, but since 60% of the electrician's work is derived from Jones-Wood installations, he does their jobs even before his own. This is partly the result of coincidence, for the young electrician started in business for himself the same day, March 1, 1956, as did Jones and Wood, and the three got acquainted within a couple weeks.

The firm, in fact, figures it has seven specialists, not counting helpers, on every job and so informs its prospects, according to Jones.

There's the man who pours the slab for the remote, air-cooling condensing unit, the specialist who installs the ductwork and/or coil, the one who runs the refrigerant piping, the electrician, the one who installs proper registers (assuming it's an "add-on" system to an existing warm-air job), the refrigerant mechanic who checks out the complete job and starts it up, and the man who finally balances the system with an Anemotherm test instrument.

The latter is performed by Jones himself. Incidentally, the firm charges $40 for such a balancing job when they're called in to service an existing heating or cooling system.

Prices Run Higher Than Competitors

How are the firm's prices?

Usually they run higher, sometimes considerably so, than quotations of competitors, indicates Jones.

Then how does the Jones-Wood firm justify its higher prices?

There are two approaches to this problem that the firm commonly uses, depending on how the salesman sizes up the prospect.

"Sometimes," Jones declares, "we'll urge the prospect to take the cheapest bid, but advise him to put aside the money he's apparently saving so he can pay us later for fixing up the job so it will work right."

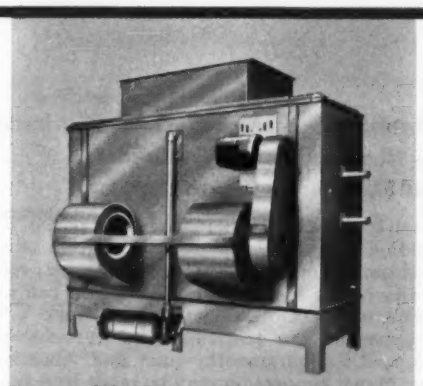
This can be a very convincing argument for having the job installed right in the first place, but, cautions Jones, you have to be pretty sure of your prospect's reactions before attempting this approach.

The other approach is generally on much safer ground although it sometimes is rather rough on competitors. This is to

(Continued on next page)

WORTHINGTON *relies upon*
WOLVERINE TUBE

Worthington Central Station Air Conditioning Unit


Worthington Model EVF Evaporative Condenser

Worthington Packaged Air Conditioner

Worthington Hermetic Centrifugal Refrigeration System

"CLIMATE CONDITIONED AIR BY WORTHINGTON"— WITH TUBING BY WOLVERINE

One of the proudest names in the heating, refrigeration and air conditioning industry is that of the Worthington Corporation of Harrison, New Jersey.

For many years Wolverine Tube has been a trusted Worthington supplier—is proud of the part its tubular products have played in Worthington's success. Of this relationship Worthington says: "For a good many years Worthington Corporation has relied on Wolverine tubing for many of its product applications. This is consistent with our efforts to provide the most reliable and efficient equipment possible."

Wolverine supplies Worthington with different types of copper alloy tubing. There is, for example, prime surface tubing in both straight length form and in fabricated hairpin bends for use in heater coils and evaporators, etc.

Helping Worthington maintain maximum heat transfer capacity in the smallest possible space is Wolverine Trufin® Type S/T—the original, integrally-finned tubing for shell and tube condensers.

Supplying Worthington's tubing needs is another example of Wolverine Tubemanship at work for the benefit of American industry. Wolverine Tube would consider it a privileged trust to supply your tubular needs. For complete information about Wolverine products and services write for your copy of "Wolverine Serves The Refrigeration Industry."

CALUMET & HECLA, INC.
CALUMET DIVISION
URANIUM DIVISION
GOODMAN LUMBER DIVISION
WOLVERINE TUBE DIVISION
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CALUMET & HECLA OF CANADA LIMITED
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO. LTD.
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Allen Park, Michigan
Manufacturers of Quality Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICHIGAN AND DECATUR, ALABAMA
SALES OFFICES IN PRINCIPAL CITIES

Making Profit In Residential Field--

(Continued from preceding page)

spell out exactly what Jones-Wood is providing for the price it asks. It usually develops that, considering what they're offering (aside from over-all quality considerations), the competition is charging more than Jones-Wood for what they're actually including in the job.

A recent case in point was outlined by Sales Manager Fey in a letter to the purchaser of a new Philadelphia "row house," who had received bids of $1,250 and $1,225 for summer air conditioning from two other dealers compared with the Jones-Wood bid of $1,326.11.

Comparison between the bids, all of which were using the same basic air conditioning equipment, is given in the accompanying table.

Note that Jones-Wood listed an additional value of $213.20, what with using a poured concrete foundation and rubber pad for the condensing unit as opposed to four cement blocks, hard copper tubing instead of soft, pre-formed pipe insulation instead of wrap-around, etc., etc.

Subtracting this additional value of $213.20 from its quoted price of $1,326.11, Jones-Wood shows that the competitors' price should be $1,112.91 instead of the $1,250 and $1,225 quoted.

Installation Average $2,000

It probably should be pointed out, however, that Jones-Wood installations have averaged out to approximately $2,000 (some run to several thousands) and involve 5-hp. units, sometimes a 2 and a 3.

Various features of installation are important selling points for the firm, as the accompanying tabulation implies.

Poured concrete foundation and rubber pad for the condensing unit section promote quiet operation, as does the suspension of the fan-coil units from ceilings on vibration eliminators, point out Jones and Wood.

There have been many such jobs because not a few of the existing homes air conditioned by the firm had wet heat systems which required the installation of an entirely separate summer cooling setup, usually with a fan-coil unit in the attic and sometimes another in the basement.

Attic Installation Problems Solved

Attic installations in some of the fine, old (and even modern) Main Line homes presented a problem that Wood solved on about the twelfth job: what to do about the (let's face it) unsightly refrigerant and electrical lines running down the back or side of the house from the fan-coil unit to the condensing unit.

Wood came up with the ingenious idea of concealing these lines in a false downspout which matched the existing downspouts. While the exposed refrigerant lines could be considered an eyesore, an extra and false downspout on a house would rarely be noticed, and even if it were observed, the ingenuity of the air conditioning contractor would receive favorable comment. In fact, the Jones-Wood firm has picked up leads and jobs from this angle alone.

Contractor Spells Out Cost of 'Extras'

Jones-Wood	Cost	Others	Cost
Concrete foundation	$ 32.00	Concrete blocks	$ 8.00
Rubber pad	6.00	None	.....
Hard copper tubing	85.00	Soft copper	67.00
Pre-formed pipe insulation	11.40	Tape	5.70
Sight glass	8.50	None	.....
Pipe vibration isolators	12.50	None	.....
Wiring in conduit	13.00	Neoprene	6.50
Canvas duct connectors	22.00	None	.....
Balancing duct system with electronic instruments for heating and cooling	40.00	None	.....
Change registers to combination heating and cooling registers	70.00	None	.....
True 24-hour service (What is it worth to you?)	.....		
	$300.40		$87.20
Total Differential	$213.20		

Extra Condensate Drip Pan Used

When fan-coil units are installed in the ceiling, Jones-Wood always places an extra condensate drip pan beneath the unit with a drain-off line terminating over a register.

"Condensate lines can get plugged up, and eventually the unit's pan might rust through," Jones tells customers. "If either of these should occur without our extra pan, condensate could ruin the ceiling before you'd be aware of it. With our arrangement, you'll quickly know that something's wrong if you see drops of water coming through the register."

Customers are assured that it won't be a steady stream of water, just a few drops.

Other installation features that are talked up as sales points by Jones-Wood include the use of degreased and capped hard copper instead of soft copper for refrigerant lines, preformed pipe insulation instead of tape, canvas duct connectors to minimize noise transmission, conduit for wiring, and the installation of sight glasses.

Sight Glass Used As Sales Point

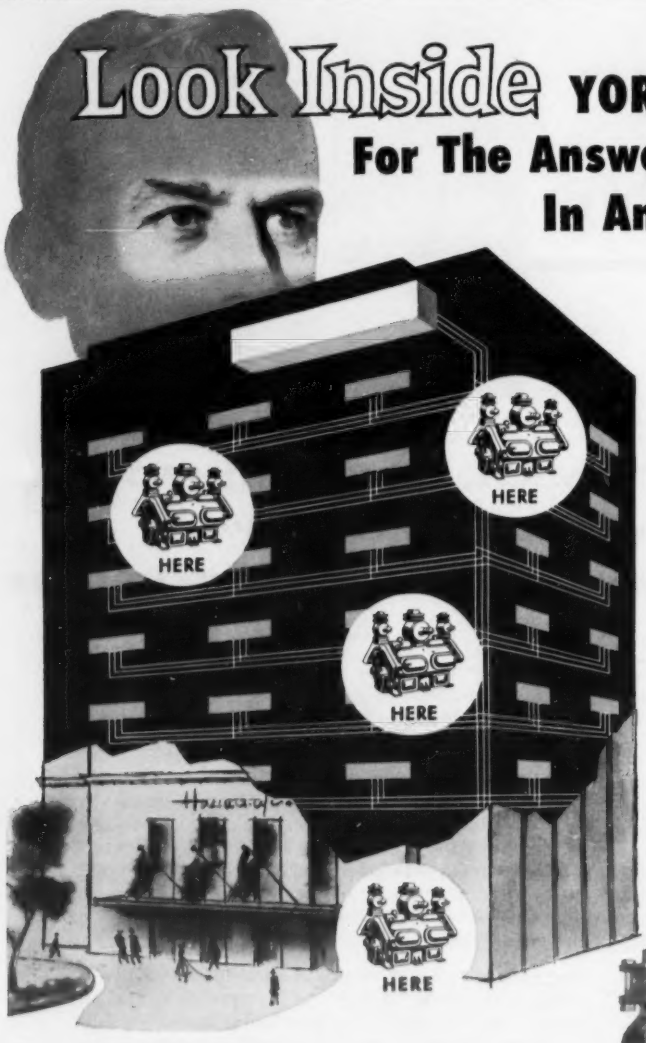
That a sight glass could be a good sales point might surprise the average refrigeration serviceman, although he knows its value in his job. But many of Jones-Wood customers are executives and professional people—doctors and lawyers—who appreciate knowing what makes a person and machine tick.

To such customers Jones-Wood carefully explains how the air conditioning system functions, including the significance of bubbles in the sight glass. This not only intrigues many customers but has helped sometimes in diagnosing service complains over the phone, according to Jones.

Besides these specific details of the installation itself, Jones-Wood gives customers a properly executed "capacity certificate" guaranteeing the rated capacity of the unit and a "comfort guarantee" which assures the customer that the unit will

(Concluded on Page 17, Col. 1)

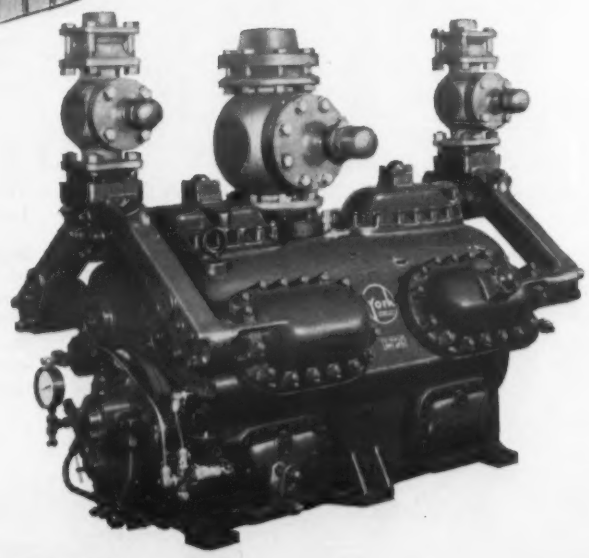
Look Inside YORK'S V/W Compressor
For The Answer to Installation In Any Available Space



Vibration-Free...Compact...It Eliminates the Need for Heavy Foundations and Shortens Refrigeration Lines

Install It Anywhere: No matter what part of the building is available for the installation of air conditioning machinery—be it basement, roof, or any of the intervening floors—you can use York's compact V/W compressor. York V/W compressors are statically and dynamically balanced to run smooth, quiet and vibration-free. Direct connection may be made to driving motors and costly, heavy foundations and long expensive refrigerant lines can be eliminated. Installation costs are reduced.

Low Initial Cost: York's seventy-five years of specialization in air conditioning and refrigeration saves you money in initial equipment costs...assures you of performance that means a quality installation everytime.



V/W Design Features like these keep the building owner happy with installations of York V/W compressors.

Low Maintenance Cost: Every V/W part subject to wear can be readily, quickly and economically replaced with ordinary hand tools!

Simplified Controls: Full, automatic unloading permits use of low torque motors, reduces current in-rush.

Low Operating Costs: Built-in capacity reduction features mean power savings in almost direct proportion to product load—28% power at 25% load.

YORK
YORK CORP. SUBSIDIARY OF BORG-WARNER CORP.
BORG-WARNER
RESEARCH & ENGINEERING
MAKE IT BETTER

Air Conditioning, Heating, Refrigeration and Ice-Making Equipment • Products for Home, Commercial and Industrial Installations

How Honeywell Air Conditioning control panels can offer greater reliability and performance at less cost

You get the advantage of one-company responsibility for all these features

- Most complete line in the industry—with matched components engineered to the highest quality standards.
- Special panels may be designed to meet the special needs of any air conditioning manufacturer.
- The most economical and trouble-free way of meeting your heating and air conditioning control panel needs—Honeywell standardization.
- One factory completely devoted to the manufacture of control panels.
- Forty years of specialized engineering experience in control panels.
- One hundred twelve field service offices throughout the country to give application, installation and repair assistance to you and your dealers.

You have more to sell when you sell HONEYWELL

Only **Honeywell** has an entire factory

Honeywell's residential air conditioning control panels are made in one factory which makes nothing but control panels. The entire plant of 72,500 square feet—the entire staff of 175 people are devoted to making the best panels at the lowest possible cost.

And *you* benefit by this specialization. You benefit from Honeywell's years of experience in the design, development and manufacture of all types of air conditioning control panels. You get dependability and time-tested quality.

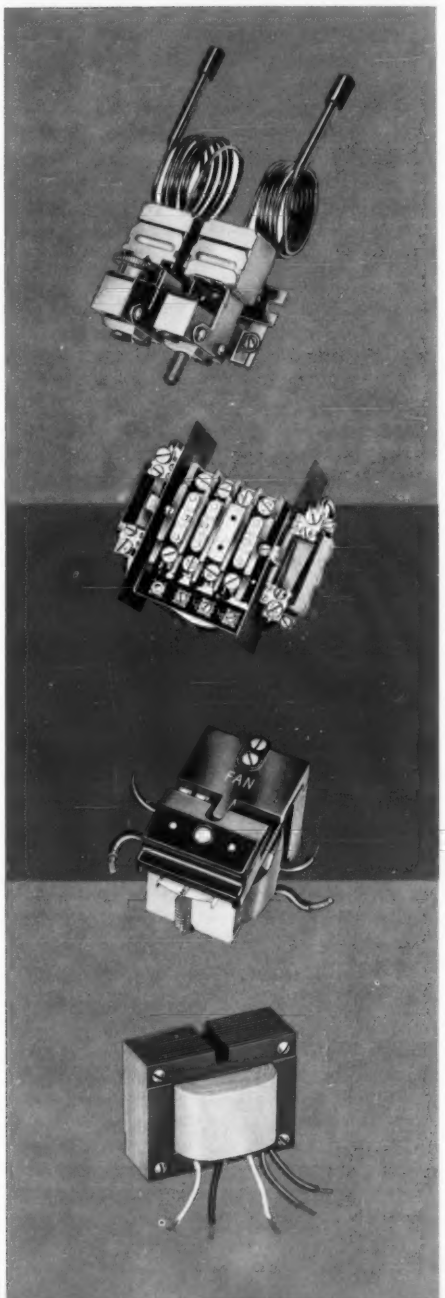
You get dealer acceptance, too, when your units are equipped with Honeywell RAC panels. Hundreds of thousands of Honeywell air conditioning panels are in operation throughout the country. Dealers understand them, like them, know they are dependable.

You get economy because of Honeywell standardization. The same transformers, terminal strips, cases, subpanels, contactors, relays, and other components are used for hundreds of panel models. This production in volume brings real savings to you.

And Honeywell backs every component in every panel—backs it with the largest service organization in the industry. 112 Honeywell sales and service offices throughout the country are always ready to give application, installation or repair assistance to you and your dealers.

that makes only control panels

Every component is designed and made with Honeywell quality . . . matched to work perfectly with every other panel component



Pressure controls. Honeywell's Pressuretrol* line is compact, functionally designed to meet every air conditioning and refrigeration application. Terminals, reset buttons and differential knob are together, need access from only one side. Switch mechanism is simple, direct acting. No tweezer parts, pivots, or levers. Knurled differential adjustment knob can be operated by hand. Needs no tools. Pressure controls are designed to work perfectly with all other Honeywell panel components. All pressure control models can also be purchased separately.

Contactors and Motor Starters. Designed especially for residential air conditioning, these new type contactors and starters provide maximum compactness and flexibility. Economical in cost, yet product quality has been rigidly maintained. Available in 2-pole, 24 amp. and 2-pole, 3-pole and 4-pole models in 30 or 40 amp. capacities, single or 3-phase. Newly designed bracket type terminal junctions afford neater, simpler wiring within a minimum space. Positive action on make and break regardless of under or over voltage conditions.

Relays. For more than 70 years, Honeywell has been known throughout the industry for its dependable, long-lasting control relays. Hundreds of millions of Honeywell relays are in use throughout the world—in a wide variety of electric and electronic control applications. The Honeywell relay department is world famous among production engineers as the originator of the continuous check method of quality control—which makes possible high output plus careful inspection through each stage of manufacture. This insures top quality for the relays and for Honeywell Control Panels.

Transformers. Internally fused, U.L. listed full 40 V.A., 115 or combination 208-230 volt primaries. High volume automation techniques combined with flexible production practices and close control of each operation have made possible the development of a wide range of Honeywell transformers. Each is suited to specific control applications—each maintains consistently high quality, lasting dependability. For example, Honeywell engineers developed a special lamination assembly machine that uses both the "E's" and the "I's" stamped for transformer laminations. Instead of scrapping the "I's" (which has been general practice in the industry) these "I's," along with the "E's" are incorporated into the core of the transformer. Result: Reduced core wattage, cooler operation, longer transformer life under maximum load conditions.

*Trademark

Choose the RAC* control panel to meet your exact needs

**Residential Air Conditioning*

Standard Models

The five RAC panels shown at right are standardized models that will handle the majority of RAC requirements. The pressure controls may be added to these panels where required. You benefit many ways by choosing one of these standard Honeywell panels:

- Standard panels are stocked in all major Honeywell Sales Offices. This means quick replacement parts for you and your dealers.
- You pay no price premium for a small lot order.
- Standard RAC panels are better understood by your dealers. Result, greater dealer acceptance, and faster, more economical installation and service.

Special Models

In addition to the five standard panels at right, Honeywell also offers many special panels to meet special RAC requirements, such as heat pump applications, two-stage cooling applications, etc.

If one of these many special panels will not satisfy your RAC needs we will be happy to work with you to custom-engineer a panel to match your exact requirements.

For further information call your nearest Honeywell Office, or write Honeywell, Dept. AN-3-59, Minneapolis 8, Minnesota.

You have more to sell when you sell Honeywell

Honeywell

H HONEYWELL *First in Control*

76-4882

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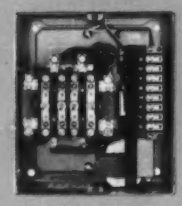
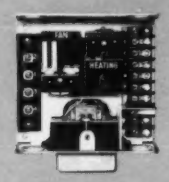
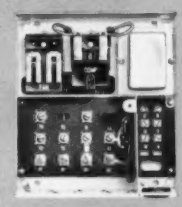


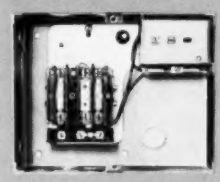
WA212AQ—Self-contained panel with 3-pole 30 amp. contactor, 2-speed fan relay, 40 VA transformer, and provision for mounting pressure control.



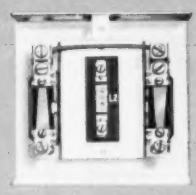
W226D—Evaporator sequencing panel with 2-speed fan relay, heating or cooling relay, and 40 VA transformer.



W429A7—Self-contained panel with 2-pole 16 amp. contactor, 2-speed fan relay, and 40 VA transformer.

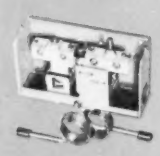


W431DN—Condensing section panel with 3-pole 30 amp. contactor and provision for mounting pressure control.



W450B1—Overload relay panel with two manual reset overload switches in box and cover; order heaters separately.

P432—Dual pressure control, bracket mounted.



P433—Dual pressure control with box and cover.

Residential Air Conditioning--

(Concluded from Page 12, Col. 5)

maintain conditions well within the ASHAE "comfort zone."

(Although such certificates and guarantees have been widely publicized, relatively few contractors actually give them to customers, at least to this writer's knowledge.)

What with charging prices that generally run higher than those of competitors, does Jones-Wood bend over backwards when it comes to terms? Hardly.

"We require 10% with the signing of the order, 40% upon delivery of the major portion of the equipment, 40% upon start-up, and 10% upon 'completion of the contract," Jones says.

Customer Doesn't Pay Last 10% Until He Is Satisfied with Job

That last "10% upon completion of the contract" means when the customer is satisfied and this, Jones readily admits, is something of a gimmick.

"Actually," he says, "we know that if a customer isn't satisfied, he isn't going to pay us in full for the job. So, we beat him to the punch by explaining that he shouldn't pay us that last 10% until he's completely satisfied."

In nearly every instance this approach has worked out okay for the firm, but there have been those few exceptions where the company has eaten up all the profit—and more—making a job right. And out of 201 jobs, the firm has only gone to court once to collect that final 10%.

With Jones-Wood claiming in many instances to be offering more for the customer's dollar than its competitors, how can the firm afford it?

"For one thing," Jones comments, "we're not trying to get rich overnight."

Ducts Insulated In the Shop

Some time and money-saving techniques have also been devised. Lengths of duct and fittings, for example, are wrapped with insulation in the shop prior to installation. This part of the job, which could require as much as 1½ days in the field, can be done in 5 hours or less in the shop where the ducts can be worked on at convenient bench height. Obviously, the joints are insulated and taped after the ductwork has been installed.

Concrete for the condensing unit slabs is premixed in the shop in pails, merely requiring the addition of water in the field.

"This way," says Jones, "one man can travel to the job, pour the slab, and be back in the shop in 4 hours or less."

During the summer peak, the firm takes on college and high school students as helpers for pouring the slabs, delivering equipment, etc. (The shop is non-union, of course.)

"Frequently these students spur our regular employes to faster and better work, and, since most of the boys come from Main Line homes, they unconsciously help teach our regular workmen better manners, keeping floors clean, etc."

Room Units Can Lead To Central System Sales

Do room units compete with the sale of central systems, and do they interest Jones-Wood?

While the firm does not actively promote the sale of window air conditioners, these units have sometimes led to the sale of central systems.

A stock of used window units is maintained by the company, which offers to "buy them back" from customers at the sales price less $25 for installation costs as a trade-in on a central air conditioning system.

The company also stocks an inventory of new window units. These are actually installed by another dealer, however.

Maintaining adequate stock of central residential equipment is another point that's important in the partners' minds. Having their own stock permits quick delivery and installation, once the order is signed, of course, but the firm also buys in quantity to obtain discounts.

In fact, last December Jones-Wood placed the largest off-season order for residential equipment in the distributor's history.

To finance such orders the company makes full use of the Douglas - Guardian warehouse plan, so that the equipment is not actually paid for until it is removed from the locked warehouse.

With most of its jobs going into existing homes, and a lot of these being added to warm air heating systems, Jones-Wood has to make sure the heating system works properly so that the cooling system will function as it should. This isn't always the case.

"Biggest problem," says Wood, "is poor air distribution. This is often caused by bad elbows which restrict air flow, poor inlet and outlet conditions for the cooling coil, improper location of registers, lack of dampers, or improper returns."

Jones also points out that lack of proper balancing can cause trouble on heating as well as cooling.

"Oh, the heating system may have been 'balanced' but not with instruments that permit a really accurate check," he says.

Incidentally, in air conditioning the firm's new quarters, a considerable variety of register types and locations has been employed so prospects can see a first-hand demonstration.

Marsh Names Barnett Sales Vice President

SKOKIE, Ill. — Robert E. Barnett has been elected vice president for sales of Jas. P. Marsh Instrument Co. here and its affiliates, it was announced recently by the firm.

R. E. Barnett

Barnett was formerly Marsh sales manager and has been with the gauge and valve company for 18 years.

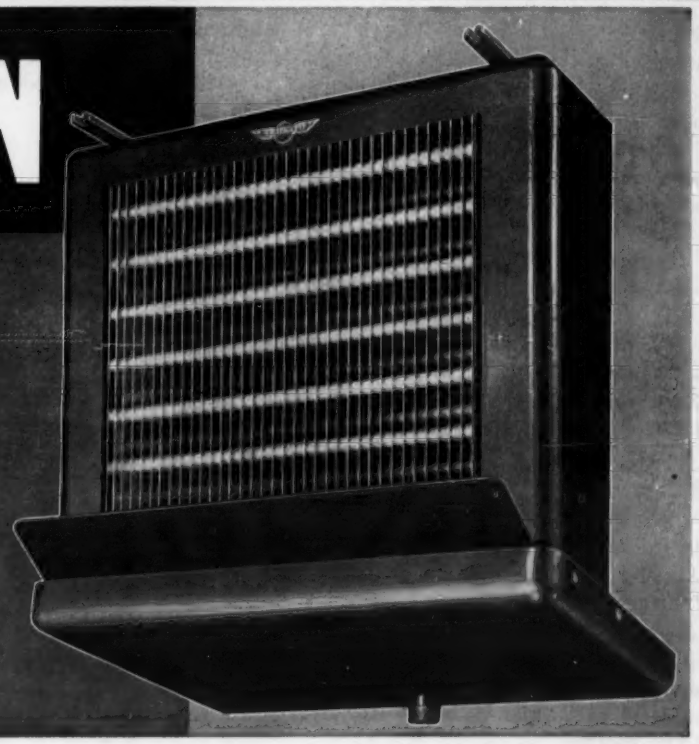
Also, the firm has added Joseph T. Carpenter, Jr. as a sales representative in its Cleveland office, according to the announcement.

He attended the U. S. Naval Academy and Northwestern university.

NEW Carrier "CANT-CLOG"* SPRAY NOZZLE

Revolutionary new self-cleaning spray nozzle reduces maintenance and maintains high system capacity. Ideal for original equipment or replacement on cooling towers, air washers, spray-coil units, etc. Low in cost. Installed in seconds. Available as replacement caps, or complete nozzles. For ratings and information, write Carrier Corporation, Syracuse, New York. * Patent Pending

LARKIN TOPS IN LOW TEMPERATURE



You name the application. For low temperature requirements, LARKIN is tops. There are ceiling, wall, and mullion humi-temps to choose from, all equipped with the simplest fool-proof automatic hot-gas defroster on the market—Frost-O-Trol.

Installation of units with Frost-O-Trol is quick, simple and economical. All you have to do is run one extra wire, one extra gas line and mount the compact control panel.

Secret of the patented Frost-O-Trol system is the factory-installed metering orifice which protects the compressor against slug back—making a re-evaporator completely unnecessary.

See your wholesaler or write for Bulletins 1032 and 1056.

BASIC RATINGS

Model	Capacity Rating Btu/hr @ 10°F TD	Total Surface Area	Cfm
LT-26	2600	69	800
LT-32	3200	79	1000
LT-42	4200	98	1400
LT-52	5200	131	1550
LT-65	6500	150	1700
LT-82	8200	201	2200
LT-104	10400	226	2800
LT-130	13000	301	3200
LT-160	16000	401	4400
LT-240	24000	501	5600

Quality Features

- Minimum temperature rise during defrosting
- Adjustable defrosting time and frequency
- No excess heat or moisture load
- Lower operating costs
- Higher efficiency of evaporator unit
- Heat applied throughout entire evaporator
- Melts frost from inside out
- Simple, low-cost installation
- Drip pan is electrically heated by a carbon impregnated, water-proof, molded rubber pad—assures positive drainage of melting ice and water—prevents freezing and spill-over
- Larkin patented Cross Fin coil—staggered tubing
- Heavy gauge die stamped aluminum case
- Self-locking nuts; vibration-proof assembly
- Standard motors with thermal overload protection

FROST-O-TROL® HOT GAS DEFROSTING ALSO AVAILABLE ON THE

WALL HUMI-TEMP

AND THE MULLION HUMI-TEMP

WATCHDOG OF THE NATION'S FOOD AND COMFORT ® LARKIN

LARKIN COILS INC.

519 MEMORIAL DRIVE, S.E., ATLANTA, GEORGIA

They'll Do It Every Time

by

Jimmy Hatlo

TO THE BUILDING MAINTENANCE GANG BIGDOME GIVES THE GRADE-A, OR EXTRA-SPECIAL GREETINGS···
GOOD MORNING, MISTER BIGDOME···
MORNIN', ANNIE!
MORNIN', PETE!
MORNIN', AL· HOW'RE THE KIDS ?
2-2
BUT HIS OWN UNDERLINGS ALONG EXEC ALLEY··· THEY GET THE FROWN-AND-GROWL TREATMENT···
GOOD MORNING, J.P.
GOOD MORNING, CHIEF
GR-R-UMPH !!!
MORNING, BOSS!
THANX AND A TIP OF THE HATLO SHAKO TO RICHARD W. ARTIS, 4739 WIEUCA ROAD, N.E., ATLANTA 5, GEORGIA

How Does A Manufacturer Figure Out Productivity Rates? Not Like Politicians Do.

ECONOMICS often is referred to as "the dismal science." Of course it is, because:

(a) It is inexact (unlike physics, chemistry, etc.).

(b) It is based, all too often, on false premises—such as theories propounded by wronghead "economic philosophers" like Keynes, Marx, etc.

(c) Its findings usually arrive too late for business operators to utilize them profitably.

(d) Politicians misuse even the best of economic trend evidence to further their own desires—i.e., to get (or stay in) a comfy position on the taxpayer's feeding trough.

In all four instances we can give you (and you can have them) loads of evidence that misinterpretation of basic economic data regarding labor productivity leads to bum decisions and wrong political attitudes.

Anyone can argue until doomsday about the merits of Right-to-Work legislation, or carp about automation and its implications for labor—and never get down to the real facts of the matter.

Relationship of long-range increases in productivity to long-range inflation of employment costs is the all-important factor in this situation.

Here are some verifiable facts about this key problem (labor productivity) as they relate to the alleged science of economics:

During the 1947-57 decade, productivity in industry generally rose an average of 2.5% per year. At the same time rising employment costs hugely exceeded productivity rates (they leaped an average of 5.5% per year). This information is based on data published by the U. S. Departments of Labor and Commerce.

Productivity per year, of course, always changes at an uneven pace. Many external factors which have little relation to worker efficiency—factors such as automated machinery, extra capital investment, more humane management, change in the ratio of skilled to unskilled workers—enter into this picture.

These are facts. And sometimes they confound figures.

Also, no double-dome economist or politician ever has been able to counteract business cycles. And the latter affect productivity immensely.

During an economic downswing workers are laid off more slowly than the rate of business decline would warrant. Thereupon an excess of labor (too many men with too little to do) naturally substimulates a decrease in "labor's" measured productivity.

Laid-off payrollees are rehired somewhat more slowly, also, during an upturn of the business cycle.

Labor productivity increases remarkably when millions of men still are unemployed, you see. Those who do have jobs want to hang on to them, and work harder during "down" times and in the beginning months of an upsurge.

Throughout the last 10 years there has been a steady increase in the number of white-collar office workers relative to sports-shirted factory workers, and this has upset economists' projections additionally.

It also should be noted that employes at the supervisory level have been increasing steadily. This movement is a significant factor in rising productivity, because better supervision means better output.

Unfortunately, standard business indices neglect all these aforementioned factors completely.

Economics, indeed, is a "dismal science."

But we need it, and IT needs rationalization—if businessmen are enabled to utilize it for so-necessary forward thinking.

Likewise, politicians.

The beginning of greatness is to be different. Conversely, the beginning of mediocrity is to be the same. Similarity fluorishes like weeds. But difference must be cultivated like rare and fragile flowers.—C. L. WHITTIER, Vice President, Young and Rubicam.

Discussion is an exchange of knowledge; argument is only an exchange of ignorance.—BOB QUILLEN.

The male's most intelligent age is between 15 and 40. After that he starts to gain some sense.—*Empire*.

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'The Conscience of the Industry'

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CORRECTS, CLARIFIES DATA ON HEAT PUMP SERVICE

Stern & Arey
3425 Sherman Ave., NW
Washington 10, D. C.

Editor:

I was the person who made the statement concerning heat pump service costs as quoted in your page one story of Feb. 16. The actual figure is $14.34 per unit, rather than the $17.40 reported, but that is a small matter.

The point I want to get across is that our experience indicates that the third, fourth, and fifth years' service is less than the first year's. This is apparently due to the fact that inherent weaknesses or faults tend to show up during the first year and are corrected.

We have been handling G-E heat pumps for over five years, and we have never had a reversing valve failure. We feel the hermetic compressors will have as long a life as the average combustion burner, subject as the latter is to dirt and oxidation.

We are very enthusiastic about the small amount of service required for heat pumps, and we feel that a properly designed air-to-air heat pump is inherently a more trouble-free and longer lasting piece of equipment than any combination oil or gas-electric unit on the market at the present time.

HOMER AREY

KALAMAZOO 'SILVER SHIELD' GOING WELL

Glen W. Rynbrand Co.
Kalamazoo, Mich.

Editor:

I read your editorial "Heat Dealers Should Buddy Up to Silver Shield Program" in your March 2 issue. It was very interesting and I am pleased to inform you that our Silver Shield program is going along very well in Kalamazoo.

No doubt you know that we are holding our State Convention in Detroit, and I would like to meet you at this convention. However, if you desire any further news on our Silver Shield operations in Kalamazoo I will be glad to forward them to you.

GLEN W. RYNBRAND

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Viking Air Products Names Furin, Thibo

CLEVELAND — Dick Gang, general sales manager for Viking Air Products, 5601 Walworth Ave., Cleveland, announced the appointments of John M. Furin to the newly-created post of supervisor of sales for Viking's manufacturing accounts and John Thibo as advertising manager.

J. M. Furin

J. Thibo

Furin, who joined Viking in 1955, will direct all Viking sales to residential furnace and air conditioning manufacturers.

Thibo was formerly production manager for Bill Ripley Studios, Cleveland. He has worked for Cleveland firms in the graphic arts field for the past 13 years.

In his new post, Thibo will direct advertising and public relations functions for Viking and correlate them with those of the parent company. The Cleveland firm is an operating division of National-U.S. Radiator Corp. of Johnstown, Pa.

Saxony Hotel Adds 200 Cool Rooms

MIAMI BEACH, Fla. — Saxony hotel, luxury resort landmark here, has added 200 additional guest rooms, and air conditioned them all.

Individual room Drayer-Hanson fan-coil-filter units, installed by Miami Air Conditioning Co., Miami, give each room and suite occupants full control of indoor weather. Public space areas utilize D-H individual-zoned air handlers.

Reopened Nov. 14, the edifice has total of 466 guest rooms in the 16-story-plus-penthouse project.

Project architect was Roy France; general contractor, Robert L. Turchin, Inc. Sanders & Hollander, Miami, sales agent, handled contract negotiations for Drayer-Hanson; the West Coast manufacturer's sales engineer was Irvin Secord.

Cory Suit

Judge Takes Mitchell Dismissal Request Under Advisement

CHICAGO — The motion of Bernard A. Mitchell and other former stockholders of Mitchell Mfg. Co. to dismiss the suit filed against them by Cory Corp. was taken under advisement recently by Superior Court Judge John A. Sbarbaro.

The Cory suit charges misrepresentation and concealment as to assets and liabilities at the date it purchased all outstanding capital stock of Mitchell. The defendants' motion claims the complaint is defective in that it fails to allege any cause of action against them.

In Corpus Christi

Coliseum Cooling Expected To Boost Revenue $10-15 Million Yearly

CORPUS CHRISTI, Texas— Installation of an air conditioning system for the Memorial Coliseum here was scheduled to begin in May, with completion expected in July.

Earlier this year, voters decisively approved a $300,000 bond issue to finance the project, aimed at bringing more tourist and convention dollars to this city. They had rejected similar proposals on air conditioning in the past.

Conservative estimates by tourist and convention officials were predicted that cooling the coliseum will add $10-15 million a year to the existing tourist trade by providing a year-round convention, entertainment, and cultural center to attract them.

Voter approval of the bond issue climaxed an intensive campaign for the proposal and, according to the Corpus Christi *Caller-Times*, "ended five years of frustration for advocates of air conditioning the coliseum."

Mayor Farrell D. Smith said the voters made "a wise decision." Commented Mrs. Margery Brown, coliseum manager: "People are beginning to realize the value of tourist and convention dollars and there wasn't any organized resistance."

Officials believe increased use of the coliseum will produce revenues sufficient to enable it and Exposition Hall to pay their own operational cost.

Air conditioning proposals were turned down in two previous elections. In 1953, voters defeated a proposal to cool Exposition Hall. At that time, the coliseum was still under construction.

In 1956, a proposal to air condition both buildings was defeated. Later, Exposition Hall was air conditioned when the Chamber of Commerce assumed responsibility for meeting the project notes.

The coliseum is now idle about 70 days a year. Rentals for 100 days more each year would pay for the bonds, Mrs. Brown estimated.

The *Caller-Times* was among the supporters of the coliseum cooling proposal. In an editorial urging voters to approve it, the newspaper had said, in part:

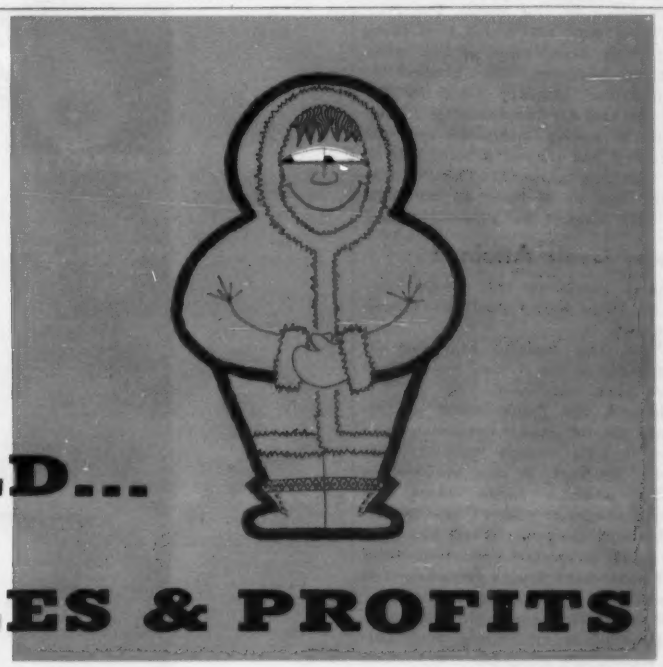
"Development of air conditioning has made it abundantly clear that within a very short time any public gathering place in Corpus Christi which is without a cooling system will be as obsolete as one would be now without electric lights."

Compressor Data for Air Conditioners

Following compressor data for air conditioning units has been submitted by Westinghouse Electric Corp. for use with 1959 air conditioning specifications published in the March 9 issue of the NEWS. Data for several other makes of compressors appeared on page 23 of the March 16 issue.

Model No.	Type	Hp.	Cooling Method	Cylinders	Bore	Stroke	R.P.M.
CLS-31	Semi-H.	3	Gas	2	2	1 1/2	1750
CLS-41	Semi-H.	4	Gas	2	2 1/8	1 1/2	1750
CLS-51	Semi-H.	5	Gas	2	2 3/8	2 1/8	1750
CLS-81	Semi-H.	7.5	Gas	2	2 3/8	2 1/8	1750

HOT OR COLD...



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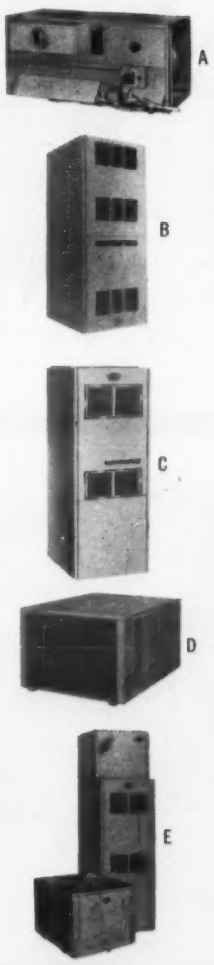

A. Horizontal Forced Air Furnaces 80-100-120-140,000 BTU. Also available equipped for air conditioning.

B. Counterflow Forced Air Furnaces 80-105-120-140-160,000 BTU. Also available equipped for air conditioning.

C. Upright Forced Air Furnaces Featuring Diamondglas Heat Exchanger 80-100-120-140-160-200,000 BTU. Other upright models, 47-60-70-75*-80*-86*-90-100*-120,000 BTU* (*also available for air conditioning).

D. Self Contained Refrigerated Air Conditioners 3 ton model, includes evaporator and condensing unit.

E. Remote Air Cooled Air Conditioner 2-3-4-5 ton models, fully charged, with precharge refrigerant tubing.

There's never "a slack season" with Gaffers & Sattler Furnaces and Air Conditioners. They've all the exciting features your customers will demand...selling features that pay off in your order book.

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Developing Military Standardization (5)

How Refrigeration, Air Conditioning Project Came Into Being, And Management and Administrative Steps That Were Utilized

This section of the report will discuss how the Refrigeration and Air Conditioning Project came into being, and the management and administrative steps which were successfully utilized.

It will also tell why and how Consultants, Inc. was brought into the project, and something of the System Engineering approach which was applied in developing the Standardization Program.

At an industry meeting in the spring of 1947, J. W. Millard, now the Director of Research of the Mechanical Engineering Division of the Quartermaster Research and Engineering Command, proposed the possibility of standardizing military refrigeration and air conditioning equipment. He was aware of the necessity for such standardization through his Navy combat experience in the South Pacific.

There was much head shaking and little acceptance of his ideas.

Now, however, the project to standardize Military Field Refrigeration and Air Conditioning Equipment is nearly complete and the industry has played a vital role in the accomplishment. The "spark-plug" role of Millard, as far back as 1947, cannot be over-estimated.

Major Goals Attained

As a result of this cooperative effort, three major goals have been attained.

First, the logistic and combat capability of the Armed Forces will have been improved.

Second, the Department of Defense should make extensive savings in its future procurement costs. **In fact, it can recover in dollar savings more than the direct contract cost of the standardization program when the first currently projected procurement of a standardized major component is completed.**

Third, a practical and effective method of standardizing mechanical equipment has been established. Heretofore, the various Services have made sporadic and often uncoordinated attempts to standardize equipment, but until the program herein described was advanced to its present state—a point at which full completion can be precisely charted—most previous efforts fell short of their goal.

In July, 1952, Public Law No. 436 was enacted by the Congress which established within the Department of Defense and under the Munitions Board a Defense Supply Management Agency. This Agency was charged with, among other functions, the development of a Military Standardization Program, the object of which was to reduce the number of types and sizes of equipment and parts and to attain the maximum degree of interchangeability.

Military Task Group Named

To carry out the military field refrigeration standardization program, the Defense Supply Management Agency appointed a Military Task Group composed of engineers from the various military services who were responsible for design of military refrigeration and air conditioning systems and related research and development projects.

It developed in the early course of this group's investigation that they had neither the time nor the personnel available to execute the program. Further, their study showed that the complex logistic problem encountered in World War II required a concerted effort be made to attain standardization of this equipment.

As a result, the Defense Supply Management Agency, on advice of the Task Group, initiated a "project" to accomplish the objective of the standardization of "Military Field Refrigeration Equipment." The Quartermaster General was designated as the agency of the Department of Defense responsible for the assembly of the necessary data and for the analytical presentation of it, from which recommendations would be made to standardize.

Consultants, Inc., was placed under contract in February, 1952, to assist The Quartermaster General in carrying out his responsibilities on the standardization of Military Field Refrigeration Equipment in the ¼-to-10-hp. range.

Early study by Consultants, Inc., was based on catalogue data which was found insufficient for the purposes desired, and it was realized that both additional design and dimensional data were required in order to determine to what extent standardization existed and could be effected.

Need for Close Contact With Industry Seen

It was recognized that close contact with industry was essential to the success of this program. In March, 1952, the Quartermaster Corps Military Planning Division requested that the Defense Supply Management Agency call a meeting of representatives of the Refrigeration and Air Conditioning Industry. As a result of this, the Defense Supply Management Agency formed an Industry Advisory Committee which held its first meeting in July, 1952. This Committee met with a representative of the Defense Supply Management Agency as chairman.

In subsequent meetings of this Committee, a plan was formulated for the entire program and, on advice of the Committee, the work scope was expanded to include "air conditioning" as the Committee advised that the same system components were involved.

The Committee also recognized that with the diversity and extent of the work to be done, it would be necessary to set up a subcommittee structure to carry out the details of standardization of the different components and such a structure was recommended. Appointments to these subcommittees were made by Defense Supply Management Agency.

It is important to note that this recommendation of the Industry Advisory Committee pointed up a basic fundamental which is the difference between "project standardization" as it was termed under the then accepted method of approach to the accomplishment of the objective (we call it "system standardization") and the present method of approach using the catalogue classes as control.

In the Federal Supply Catalogue as now defined, Refrigeration and Air Conditioning is broken up into three classes as follows:

4110 Self-Contained Refrigeration Units and Accessories

4120 Self-Contained Air Conditioning Units and Accessories

4130 Refrigeration and Air Conditioning Plants and Components

The "project" initiated under the Defense Supply Management Agency in 1952 crosses all three of these classes since, as the Committee pointed out, the same components are used in either "refrigeration" or "air conditioning." Further, even though the presently "going project" is termed "Field Refrigeration and Air Conditioning Equipment" the standardized components

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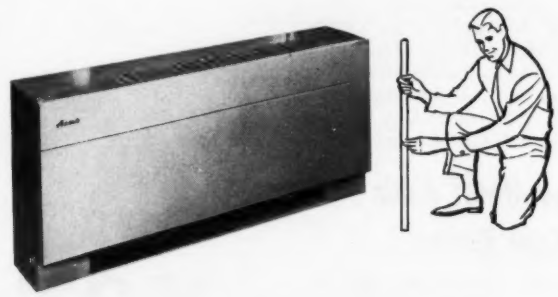

AIR HANDLERS

Floor or ceiling mounted units for complete air conditioning: cooling, heating, filtering, ventilating, humidifying and dehumidifying. Particularly versatile in installation and available with a complete selection of matched optional equipment. 33 models in 18 sizes from 665 to 36,000 cfm.

MULTI-ZONE AIR CONDITIONERS

Ideal for buildings where load in different areas is variable. Will closely control conditions in as many as sixteen separate zones, giving each exactly the combination of temperature and humidity that it requires. Unit can heat one zone while cooling another. 5 sizes in 56 coil combinations from 4060 to 19,200 cfm.

may be "fed" into all three Federal classes.

"Project Standardization" as then conceived has since evolved into "System Standardization," as we term it, through the application of engineering analysis to the complex of operating and static components making up the "system" which produces the "end product" whether it be "refrigeration" or "air conditioning."

The same components may be used in either "system" and within limits the same "system" will produce either "end product."

Study by the Industry Advisofy Committee of the over-all program also led them to suggest that the basic effort be concentrated on the problems envisaged by them to be involved in the standardization of the "open type" compressor.

The Committee analysis of the full project reflected their feeling that if standardization was possible and practical, it would of necessity have to include open-type compressors for the top priority field equipment which was gasoline engine driven. They regarded the standardization of this compressor to be the most difficult of achievement and frankly stated that unless this phase of the project could be successfully completed, the whole program should be abandoned.

The Open-Type Compressor Subcommittee, therefore, was convened to carry out the work incidental to the standardization of that component. As this program progressed, it was found desirable to form a working group composed of design engineers from the industry. This working group was charged with resolving the broad recommendations of the Subcommittee into specific details acceptable to both the military and to industry.

At the time the Standardization Program was originally activated, substantial doubt existed in the minds of many military and industrial groups as to whether it would be possible to effectively coordinate military design criteria and operational requirements with commercially manufactured items of equipment in order to achieve standardization on other than a very limited basis. There were no existing guidelines to follow nor basic correlated data to use in establishing a **modus operendi.**

This led to considerable discussion of possible methods of approach to effect the standardization of the "open type" compressor. This discussion was not at all times amicable, for there were partisans of several ideas who fought for their ideas. The following were considered:

A. Design a military model.

B. Design standard high-mortality parts. (Similar to gasoline engine standardization accomplished by the Corps of Engineers.)

C. Use commercial components which are interchangeable size for size regardless of manufacture. (Similar to electric motor standardization.)

Comment

A. Military Model

This was considered the only satisfactory solution by some of the personnel involved and would be the ideal solution from a military logistic viewpoint. The idea was rejected on the basis of an analysis prepared by Consultants, Inc., which showed that a military model would require major tooling changes by the majority of manufacturers in order to meet the military production necessary in an emergency.

The cost would be prohibitive and such standardization would preclude the military from taking advantage of technological advances made in this dynamic industry.

B. Standard High-Mortality Parts

This has the appearance of being successful in the gasoline engines but it does have weaknesses. The assembled components are not interchangeable.

Parts are interchangeable between different manufacturers only when they have the same bore size. Therefore, it is necessary to stock parts for all bore sizes used by industry.

This method was not acceptable to the Industry Advisory Committee and they made a basic recommendation that standardization be developed without going inside the commercial product.

C. Adapt commercial components to make them interchangeable from a functional and dimensional standpoint.

This method was adopted in the open-type compressor standardization.

The procedure given herein to attain a standardization objective is the result of a process of evolution from what was originally a chaotic state to one which has assumed a definite pattern. Much time was lost in the initial stages of this project because of the necessity to use trial-and-error methods. But as time progressed, guidelines were formulated and, today, as a result of this experience, it is possible to set forth a step-by-step method.

Experience gained in the performance of the work of standardizing Military Field Refrigeration and Air Conditioning Equipment indicated that a "system" standardization project may be broken down into eight work-phases.

This experience also dictates that regardless of the type of project which is contemplated, no valid judgment may be made as to the methods of attaining the standardization objective unless the first three phases or work equivalent to the first three phases of this procedure is substantially completed. We must know "who uses what" and "who makes what" before we will be able to make any decisions.

The Standardization Administrative Officer will also recognize that a part of the responsibilities detailed for the Project Officer and all of those of the Technical Staff are the basis for the work scope of the contract of the consultant engineering Contractor when the employment of such a contractor is feasible.

PHASE I

Analysis of the Standardization Problem.

PHASE II

Specification Survey and Review of Department of Defense Use of the Unit, System, or Component under Study.

PHASE III

Survey of Items Commercially Available.

PHASE IV

Participation of Industry in the Attainment of the Standardization Objective.

PHASE V

Correlation of Military Design Criteria, Operational Requirements, and Test Procedures with Industry Practice.

PHASE VI

Development of Specifications and Standards.

PHASE VII

Coordination of the Standards and Specifications with Cognizant Government Agencies and Industry.

PHASE VIII

Development of a Master Engineering Standard.

(The End)

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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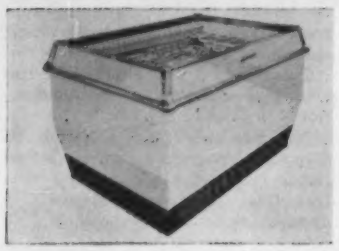
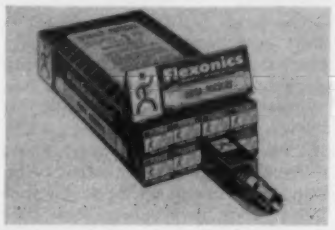


● Addition of a 5-ft. self-contained, low temperature island merchandiser to its line of self-service equipment has been announced by McCray Refrigerator Co., Inc., Dept. AH&RN, Kendallville, Ind.

It will be known as the FF-5M for frozen food and the IC-5M for ice cream. The frozen food model will have a control to provide normal temperature "at the flip of a switch."

No drain is necessary as defrost water is automatically evaporated. Another feature is a special condenser which does not require periodic cleaning.

These models measure 62⅛ by 44½ in. and have a reach-in height of 36½ in.



Vibra-Sorber Has Multi-Pack

● A new "Vibra-sorber" multi-pack which permits a wholesaler to stock, in a convenient self-service counter display, a quantity of its vibration eliminators for use in heating and cooling applications is being offered by Flexonics Corp., Dept. AH&RN, 1415 S. Third Ave., Maywood, Ill.

Heat Controller Bows Air Conditioner Models

● A new "Comfort-Aire" portable room air conditioner (model W-501) and new central air conditioning and heat pump product lines have been introduced by Heat Controller, Inc., Dept. AH&RN, Losey at Wellworth, Jackson, Mich.

The ½-hp., 115-volt portable unit has a capacity of 4,000 B.t.u.h., over-all dimensions of 12 in. (high) by 18¾ in. (wide) by 15⅝ in. (deep), and a net weight of 66 lbs., according to the company. Other features include a "tuck-a-way" handle and mounting kit "for easy moving and mounting into windows up to 36 in. wide," and a "Dynel" washable replaceable filter. Suggested list price is $169.95, including warranty.

The company also introduced its new remote 3-hp. heat pump system along with newly-designed, self-contained air conditioners in 2, 3, and 4-hp. sizes. The company will also produce remote units in four sizes—2, 3, 4, and 5 hp. Among features of the line are slide-out chassis, double-baked "Epon" paint, Tecumseh compressors, and oversized coils.

Want More Details?

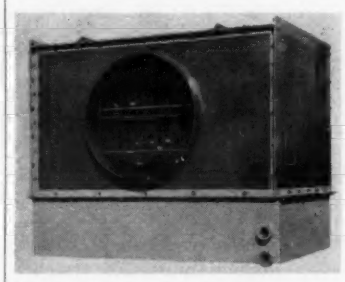
ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

Kelvinator Offers New Water Cooler

● Addition of a new product—the "Bubbelet" (model A3P) to its "All American Series" line has been announced by Kelvinator Water Coolers, Dept. AH&RN, 265 North Hamilton Rd., Columbus 13, Ohio.

The unit is "designed, engineered, and priced to fit small businesses," it was stated. "Several Bubbelets can be strategically located in larger offices to reduce time spent walking to and from a single, larger water cooler.

Occupying 1 sq. ft. of floor space, this model serves 3 gals. per hour of cool drinking water, according to the manufacturer.



Air Washers Use New Construction Concept

● A new line of air washers, entirely fabricated of rigid polyvinyl chloride is now available in a range of capacities from 1,000 to 54,000 c.f.m from Industrial Plastic Fabricators, Inc., Dept. AH&RN, Endicott St., Norwood, Mass.

Designed to handle acids, alkalies, and corrosive fumes more economically and efficiently, these air washers will clean 96% to 99% of contaminants that are instantaneously soluble in water, such as chromic acid, sulphuric acid, caustics, etc.

An entirely new concept of construction is employed. I.P.F. fabricates the entire unit of rigid unplasticized PVC, a material that is extremely smooth surfaced and non-porous.

Due to these characteristics there is less resistance to air flow, no water absorption, and less material build-up on the packing rings or structural surfaces.

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NOZZLE NO.	IPS	GPM AT 7 PSI	SPRAY ANGLE
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H 1.0	⅜"	1.15	75°
H 1.8	½"	1.8	90°
H 2.5	½"	2.5	100°
H 3	¾"	3.8	76°
H 5	¾"	5.0	85°
H 7	¾"	7.0	100°

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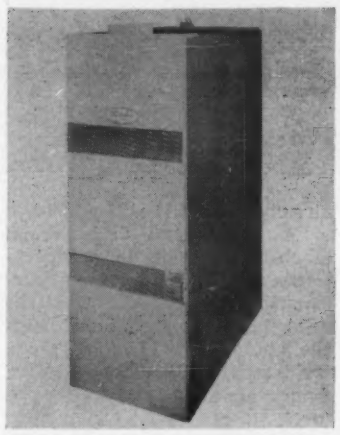


Thatcher Line Claims Radical Design Changes

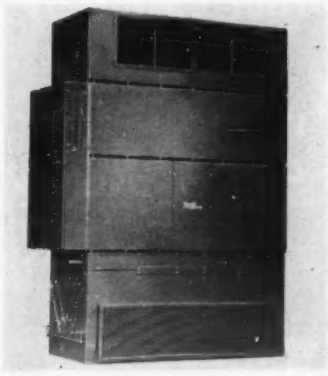
● A new line of eight gas and oil winter air conditioners "incorporating radical design and color changes" has been announced recently by Thatcher Furnace Co., Dept. AH&RN, Garwood, N. J.

Called the "Blue Ribbon Line" for 1959, the new units are "compactly designed with warm air blowers positioned under the heat exchanger, an arrangement that makes possible a cabinet of minimum height without interfering with heating efficiency," the company said.

The metallic blue and gold-bronze color of the "appliance styled" line was created by industrial design consultant Howard Ketchem.

Stressing the line's flexibility of design, a Thatcher spokesman said: "All hi-boy units can just as easily be installed as lo-boys by attaching a factory engineered and built return air cabinet (cold air drop)."

Another new feature is a "Cerafelt" combustion chamber made of spun refractory fibers that "maintains low heat conductivity, is light weight, unbreakable, and highly sound absorbent," the firm disclosed.



Offers Large Heating, Ventilating Units

● "Seasonvent," a new line of large capacity heating and ventilating units, has been announced by G. G. Workinger, sales manager of McQuay, Inc., Dept. AH&RN, 1600 Broadway St., N.E., Minneapolis 13.

The quiet operating Seasonvent is engineered specifically for applications such as school auditoriums and theaters. It is available in nine sizes for low static applications (0 in. to ⅝ in.), and seven sizes for high static applications (¾ in. to 1¼ in.), with capacities ranging from 1,250 c.f.m. to 15,000 c.f.m., according to the announcement.

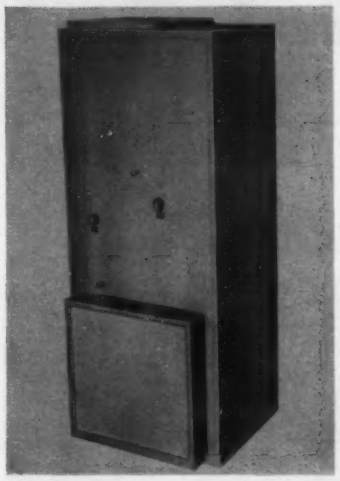
All Seasonvent models are equipped with sound absorbing plenum section with the fan motor internally mounted and are all available in horizontal, vertical, or wall mounting arrangements, it was stated.

Air Handling Unit Is for Apartment Buildings

● Introduction of a complete series of compact "Hide-a-way" air-handling units, in sizes from 500 to 1,100 c.f.m., for apartment buildings has been announced by Hastings Air Control, Inc., Dept. AH&RN, Omaha 5, Neb.

"One of these units is installed in each apartment in a 4-sq. ft. central closet, and short ducts deliver warm or cool air to individual rooms," it was explained. "Air is returned to the unit through a louvered door."

The manufacturer claims that Hide-a-way units "may be installed competitively with the simplest type of heating system, yet offer complete heating, ventilation, filtering, humidification, and individual apartment control—plus the option of adding a mechanical chiller at any time for cooling."



Hide-a-way units are available for chilled or well water with four or six-row coils, header or serpentine circuiting, and aluminum or copper fins. Standard equipment includes coil, blower, motor, adjustable drives, filter, cabinet, and insulation.

"All parts are fully accessible from the front so that no clearance space is needed in back or on either side," the company said.

Portable Vacuum Claims Big Machine Performance

● Big vacuum performance in a small, compact, one-hand portable machine is claimed to be offered by the Empire "Stubby," a new multi-purpose, "low cost" vacuum introduced by Empire Chemical Products Co., Machine Div., Dept. AH&RN, 10 Longworth St., Newark 2, N. J.

The Empire Stubby weighs 25 lbs. and is 21 in. high by 16 in. wide. Powered by a ½-hp. motor, operable a.c. or d.c., and equipped with multi-stage turbine-type fans, it gives a 70-in. vacuum pick-up, wet or dry, the company stated.

It is fitted for change-over to blower action.

Tank capacity of the unit is about a half-bushel of dirt or 4 gals. of water, and for convenience in dirt disposal the machine is used with disposable paper bags, according to the manufacturer.

Twenty-five feet of cord, 10 ft. of plastic hose, and a radiator tool are included with the machine, priced complete at $96.50, f.o.b., Newark. The Stubby is said to be suitable for heating plant cleaning and, with blower action, for cleaning condenser coils to maintain air conditioner efficiency.

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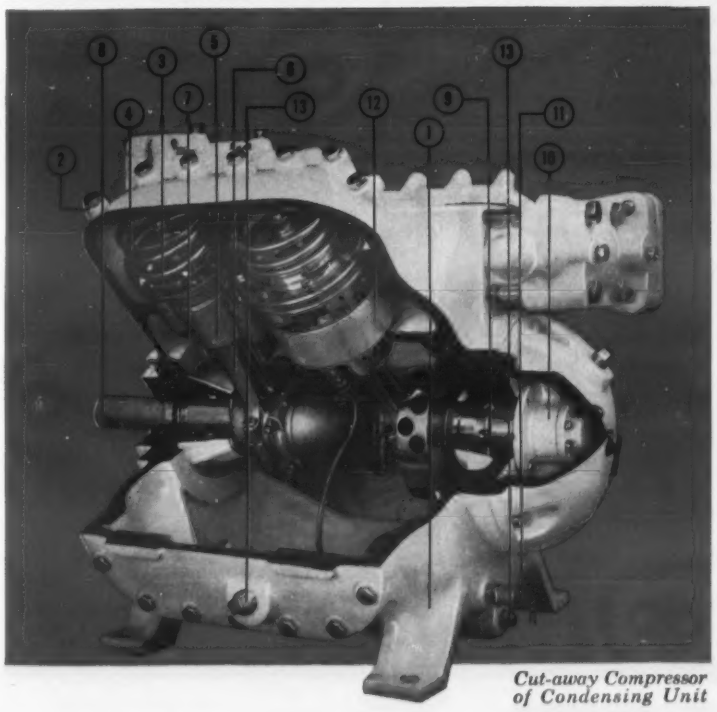

Cut-away Compressor of Condensing Unit

The B&G Condensing Unit offers an impressive list of features, *many of them exclusive*, which make it completely outstanding. It is amazingly compact as well as efficient—the shortest unit available on the market today.

The cut-away illustration shows the highlights of compressor construction—

1. **Compressor housing.** Monobloc design using pressure-tight iron which meets Underwriters' requirements for use with R-12 or R-22.
2. **Cylinder heads and cover plates.** Cast of same material as compressor housing.
3. **Suction and discharge valves.** Highest grade Swedish steel—non-flexing, full floating. Low lift with positive gas-cushioned backstop for quiet operation.
4. **Safety springs.** Prevent damage from occasional liquid slugs.
5. **Pistons.** Automotive type, of light weight alloy. Full floating wrist pin, two compression rings and one oil control ring.
6. **Connecting rods.** Light weight, heat-treated alloy—rifle drilled to assure positive lubrication of wrist pin.
7. **Cylinder sleeves.** Removable cylinder liners of special alloy iron are machined and housed to a maximum tolerance of 0.0005 inches.
8. **Crankshaft.** High tensile, ductile iron. Greater strength and noise dampening qualities make it superior to conventional forged steel shafts. Running surfaces induction hardened and polished—shafts are statically and dynamically balanced—rifle drilled for forced feed lubrication.
9. **Main bearings.** Heavy wall bronze, diamond bored after assembly for close tolerance.
10. **Forced feed lubrication.** Positive-displacement, self-reversing oil pump supplies excessive oil to main bearings, connecting rods and wrist pins.
11. **Crank case heater.** Standard equipment on all compressors.
12. **Capacity Control.** Can be equipped with multi-step capacity control system.
13. **Standard equipment.** Gas and oil equalization ports, magnetic plugs and oil sight glass.

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What's Going On in Commercial Refrigeration

News of Markets, Products, Methods

Commercial Refrigerator Mfrs., Public Health Officials Meet with NSF To Establish Standards

ANN ARBOR, Mich. — A group of manufacturers of commercial reach-in and walk-in refrigerators and freezers for food service and professional people in public health sat down together under the auspices of the National Sanitation Foundation Headquarters, School of Public Health, University of Michigan, here, for the purpose of creating a health standard in their field of commercial refrigeration on a national basis, it was pointed out.

GROUP of manufacturers and public health officials meet with National Sanitation Foundation to set up national health standards to govern commercial refrigeration.

Ten manufacturers represented the industry and eight professional public health workers represented the public health profession. The meeting was held in the laboratories of the National Sanitation Foundation. For two days a joint effort was put forth to upgrade the commercial refrigeration program for the protection of public health, according to the foundation.

Charles A. Farish, assistant director of the NSF testing laboratory, said: "This standard on commercial refrigeration will take its place along with other standards which the foundation already has in the food field.

"A buyer of commercial reach-in and walk-in refrigerators and freezers for food service will be able to know if the refrigerator he is buying meets the standard by looking for a nSf Testing Laboratory Seal of Approval upon the refrigerator."

The manufacturers are already starting to make changes so that their refrigerators will meet the National Sanitation Foundation standards which should be in effect in about 12 months.

The *Industry Advisory Committee* includes: Traulsen & Co., Inc.; Glenco Refrigeration Corp.; Chrysler & Koppin Co.; Koch Refrigerators, Inc.; McCall Refrigerator Corp.; Herrick Refrigerator Co.; Victory Metal Mfg. Corp.; Jewett Refrigerator Co., Inc.; Silver Refrigeration Mfg. Corp.; and Foster Refrigerator Corp.

On the *Special Public Health Committee* are:

Morton S. Hilbert, director, Wayne County Dept. of Health; M. B. Crabill, director, Omaha-Douglas County Health Dept.; Edwin Ludewig, director, New York City Dept. of Health.; A. F. Parrish, Public Health Engineering, State of Georgia; James W. Smith, director, Bureau of Tourist Establishment, Sanitation; T. E. Sullivan, director, State of Indiana Board of Health; R. L. Tarbett, Dept. of Public Health, State of California.

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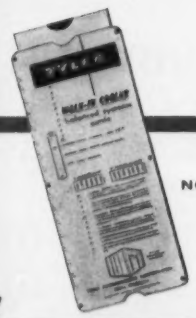
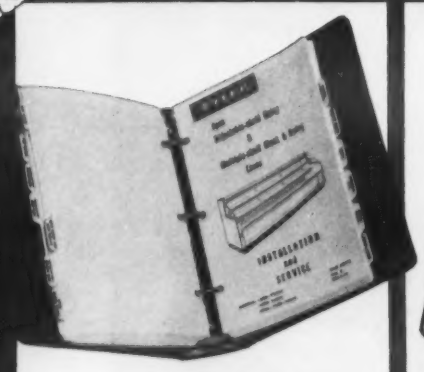


NORMAL AND LOW TEMPERATURE WALK-IN COOLER BALANCED SYSTEMS GUIDE



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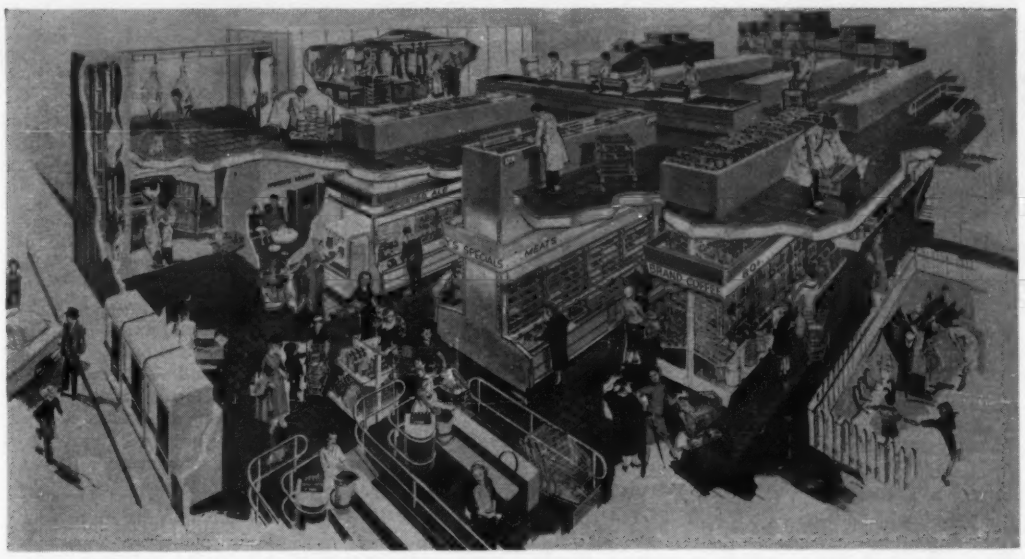

ARTIST'S DRAWING of Tyler's Supermarket of Tomorrow shows vertical nature of the new concept. Meat handling system on second floor receives meat from the delivery, weighs it, and conveys it to a cooler—all under refrigeration. Outside, coin-operated vendors will provide 24-hour service for a wide variety of essential food items. Plans for the store are based, according to Tyler, on mechanical inventions and new arrangements, for which patents have been applied.

Supermarket of Tomorrow

Shopper Convenience, Speed, and Range of Selection Featured In Tyler's Conception

NILES, Mich. — In what it calls a "preview of tomorrow's supermarket," Tyler Refrigeration Corp. has developed plans for a food supermarket incorporating some innovations in design which Tyler says are aimed at improving shopper convenience, speed and range of selection, and general store efficiency.

A conception of Joseph B. Hennion, Tyler's director of merchandising, the plans for the store as envisioned by Tyler research engineers are actually based on definite mechanical inventions and new arrangements, for which patents have been applied and on which development work is now in progress, Hennion states.

Primary difference in the market's design and operation will be a more vertical character of display fixtures, and generally speaking, loading of display cases semiautomatically, accomplished without any interference with the customers.

Loading trucks and clerks will be done from the sales floor; all processing and pricing activities will be conducted on another floor; a steady, semi-automatic flow of merchandise will take place in an orderly fashion. Thus, "stock-outs" or temporary shortages of certain items on display will not occur, it is stated.

Supermarkets Will Become More Compact

Because displays will become more vertical, and space above present levels will be utilized to full advantage, supermarkets will become more compact, the Tyler executive contends. A wider range of products could possibly be offered and space saved might be devoted to more facilities for customers' convenience and relaxation—such as new lounges, snack bars and other refreshment facilities, and kiddie corrals.

It is contended that the new plan will make perishables of all types more readily available —fresher and in better condition than ever before. Reason for this is credited to improved refrigeration; faster, more direct flow from receiving room to customer; and partly by controlled rotation of items.

While much of the new store equipment will take advantage of automatic vending features, there will be no sacrifice of visibility of the merchandise on display, nor of the customer's ability to examine items on sale, said Hennion. He states that a steady stream of food packages will flow in all departments, but the customer can still inspect, accept, or reject, and ask for and receive personal service.

24-Hr. Service To Be Provided by Vendors

With the introduction of coin-activated, outside venders in the exterior walls of the new type supermarket and automatic change-makers, the public will be able to shop for all essential food items 24 hours a day. These will include venders for all staples, including fresh meats, produce, dairy products, frozen foods, and bakery products.

At least one of the new fixtures shown in the plans for this "supermarket of the future"—a refrigerated vender for frozen fruit concentrates, frozen soups and the like, will be ready for production shortly, Tyler states, and many of the other fixtures are in various states of development, although their final exact form has not yet been determined.

As shown in the artist's drawing of the "tomorrow's supermarket" as it might be, the meat handling system on the second floor receives meat from the delivery, weighs it, and conveys it to the cooler—all under refrigeration.

After preparation in the cutting and wrapping room, meats are taken to "refrigerated merchandising units" which moves merchandise on trays from the loading station to the customers and return.

Tyler officials state that in the plans for the merchandising units, the vertical refrigerated dispensing sections will be modular and put together much like present-day open refrigerated display case equipment.

Size of Vertical Units To Be Determined Later

To build these vertical sections in one piece would result in high production costs, and there would be no good reason for it. Sections might be made available in 4, 6, or 8-ft. lengths, but actual sizes and shapes will not be determined until the manufacturer gets into making actual prototypes.

Basically, refrigeration will be supplied through a central system, but the new vertical display fixtures will be designed for self-contained applications as well to accommodate "bantam" stores or those with limited perimeters.

PILOT MODEL of Tyler frozen food vendor, for frozen fruit concentrates, and other items. View shows approximately how provision will be made for display, and for selection by customer of flavor or brand desired.

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D — Hot and Cold Liquids, Refrigerants, Boiler Feed, Cooling Towers

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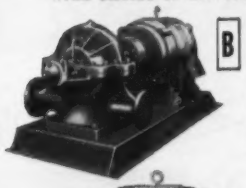
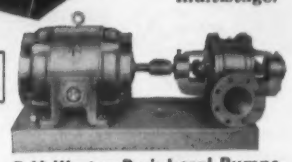
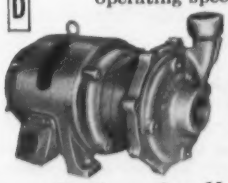


B — **F-M Split-Case Centrifugal Pumps** Capacities, pressures and sizes for any requirements. Single-stage or multistage.



C — **F-M Westco Peripheral Pumps** Capacities to 200 gpm. Pressures to 900 ft. Sizes 1½" through 2½". Horizontal single-stage or multistage. Develops high pressure at normal operating speeds.



D — **F-M Builtogether Centrifugal Pumps** Capacities to 900 gpm. Pressures to 525 ft. Sizes ¾" through 5". Single-stage or multistage.

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Hattenbach Offers Yardstick

What Is A Qualified Distributor?

MIAMI BEACH, Fla. — "The future of the distributor in the commercial refrigeration and air conditioning business is better and brighter than ever before—if we are ready and qualified to assume the responsibility and do the job."

That is what Harry Hattenbach, president of the Hattenbach Co., Cleveland, told fellow distributors at the 12th annual convention of the National Commercial Refrigerator Sales Association here.

"Modernize your thinking, your knowledge, and your ability and you will not have to worry about the future of the distributor," he advised.

NCRSA's retiring president told them how his company is organized to protect its future.

"As a company who distributes, and represents several manufacturers, we know we must be a selling organization," he declared. "When I speak of selling, I no longer mean an old fixture salesman as such. It is still necessary to know your product backwards and forwards, as to material and design, but this will no longer secure your sale.

"Our sales representatives today must be store engineers. You may want to know what our store engineers have to be capable of doing. I can best describe the functions they perform by telling you the different steps or approach we make in building a sale:

HARRY HATTENBACH, right, retiring president, accepts desk set presented to him by S. G. Taylor of Des Moines on behalf of National Commercial Refrigerator Sales Association.

How To Build a Sale

"1. Building Site. We make a survey of a possible location, and give our opinion from experience, as to the possibilities of a successful store.

"2. Plot Plan. From this plan, we determine the store size, parking layout, and general exterior design.

"3. Store Layout. We make a store plan, showing a complete store interior layout.

"We stop at this point and price the job. Now is the time for the customer to make a decision whether or not to go ahead, both with the store and with us. We do not draw the mechanical plans, as we call them, which include electric, plumbing, etc., unless we secure at least part of an order.

"Yes, there have been exceptions to this procedure, but they are the exception and not the rule with us.

"Although we don't make up mechanical plans until we secure an order, we do impress upon the customer the services and additional plans that are necessary to put in a complete installation.

"This we do by using plans of installations we have already installed. You may be interested in exactly what other plans will later be included.

"They consist of: electrical plan, plumbing plan, tower plan, air conditioning layout, lighting plan, special store design and partition layouts, and, last but not least: merchandising plan.

"This may seem like a lot of work to conclude a sale, but I can say it has paid off in results. Today we operate a sales, service, and engineering company.

"When I include service, I am not referring to our refrigeration service department, which is another separate operation in our business.

Kill 'Em with Service

"When we think today of sales, we have found that service, follow through and store engineering are our real sales tools to secure our customers to us. If we have the qualifications and the know how to do the job —you might follow up and say 'we kill our customers with service.'

"We are matched and beat many times by our competitors, who might be other distributors or direct factory representatives on price. This we don't try to match, but we have found they also cannot match us on our service and store engineering knowledge."

That, Hattenbach emphasized, is what he means by being a qualified distributor.

What of Small Distributor?

What about the small distributor? Hattenbach observed that many distributors are small because they choose to remain small.

"I believe remaining small has both its advantages and disadvantages," he observed. "However, if you can remain small and still remain in the picture is maybe the biggest question."

He said a large manufacturer conducted a survey which indicated that the percentage of manufacturer sales through distributors has changed little. If anything there was a slight improvement.

But, he noted, the percentage was held by sales improvement among the top ranking and qualified distributors.

"It is my suggestion that the small distributor should take inventory of himself," Hattenbach declared. "Maybe he should expand his efforts with more sales personnel, study merchandising techniques, and bring his thinking and services offered to the plane of today's operation.

"When I visit with manufacturers they always tell me they have to take over in some territories on a direct basis because they do not have a top qualified distributor. I don't believe this is the sales plan they would like to follow because it is the most expensive sales plan they can have."

Evaluates Mfr. Sales Policies

Is direct selling by a manufacturer good or bad for him?

Hattenbach said he found that manufacturers fell into three classifications: those who sold exclusively through distributors; those who sold partly through distributors and partly direct; and those who had no consistent sales policy at all.

A survey would show, he asserted, that the manufacturers in the first classification have the best distributors and are doing the major volume of business in their category.

Those in the second group will always be second with that kind of sales plan, he affirmed.

"How can a distributor build for the future and have such a sales policy by the manufacturer he represents over his head?

"This group of manufacturers should, in my way of thinking, establish a more definite outline, publicly, of their sales policy. I mean they should definitely announce publicly when they will sell direct and when they will sell through a distributor.

"If a distributor must qualify, they should outline their qualifications in understandable form.

The manufacturer in the third group—the one who sells anybody, any time, at any price—is, in Hattenbach's estimation, scrambling in the dark.

"And the light will never come through," he added.

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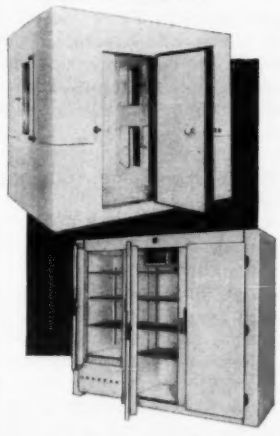

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Men on the Move . . .

Carrier Corp. — ALBERT A. GIANNINI, New York district sales manager for the Machinery & Systems Div., was promoted to assistant regional manager in northeastern U. S. AUGUST CONTARDI, the division's senior salesman in the New York area, will replace Giannini in the New York post.

York Div., Borg-Warner Corp.—David D. Brenneman, for eight years a member of the quality control and inspection group, has been promoted to production supervisor.

Bell & Gossett Co.—JOHN MARSHALL has been appointed divisional comptroller. He will supervise all accounting operations at the Morton Grove plant.

Wolverine Tube, Div. of Calumet & Hecla, Inc.—JAMES R. WICKER, formerly sales representative in the general sales office, has been appointed sales representative in the Rochester office of the New York district. D. R. FREDERICK was appointed sales representative in the Birmingham (Ala.) district.

Century Electric Co. — F. L. (TED) BEATTIE has been appointed district manager of the Milwaukee office. He has been acting manager since September, 1958.

Clyde Webb Co., Inc. (Fort Worth, Texas)—LOU (TEX) LEVY has joined this manufacturer's representative. For the past seven years he was district manager for Lehigh Mfg. Co. in the New York area.

Franklin Electric Co., Inc.—R. P. NIXON was elected vice president, finances and manufacturing, and A. C. BeVIER was elected vice president, marketing. Nixon joined Franklin in 1952 and BeVier in 1957.

Heat Controller, Inc. — R. P. COOK, Tampa, Fla., has been named southern sales regional manager. Formerly chief engineer for Typhoon Heat Pump Co. of Tampa, he will travel in seven southern states for Heat Controller.

White-Rodgers Co. — LEONARD R. WREN was appointed sales engineer. He will handle heating, air conditioning, and refrigeration controls in the newly-formed Seattle sales area. His territory will include Washington, Idaho, western Montana, and Alaska. Wren was formerly a sales engineer for Columbia Equipment Co., a Spokane road machinery dealer.

Dunham-Bush, Inc.—JOHN CASTELLO has been appointed manager of the Los Angeles district office. DENNIS TIMMONS was named an application-sales engineer at the Riverside, Calif. plant. He will act as an application engineer at the plant and as a sales engineer in the Riverside area.

T. L. JOLIAT, former application engineer, was appointed sales engineer at the Detroit district office.

Motor Wheel Corp.—Appointment of WILLIAM L. WOOD as sales promotion manager of consumer products was announced. He will be responsible for advertising and sales promotion activities in connection with "Duo-Therm" home and mobile home equipment and "Reo" power mowers. A veteran of 10 years with the Oldsmobile sales promotion department, he succeeds Theodore D. O'Hearn who resigned to join a Detroit advertising agency.

FREDRICK WENSON was named an application engineer at the same office. DARRELL PICHT was appointed salesman in the Dallas area.

CHARLES A. MEYERS was named sales engineer in the San Antonio area. IRVIN LIST, JR. of Houston was appointed an application engineer and assigned to the southwest district office.

Trane Co. — FRED MANGET, formerly manager of the New Orleans sales office, was appointed manager of the Philadelphia sales office. He is succeeded in New Orleans by GEORGE SHEPHERD, who has been a sales engineer with that office. JACK RENNINGER was named manager of the newly-franchised sales office in Wilmington, Del. He has been a sales engineer with that office, which was formerly a sub-office of Philadelphia.

Philco Corp.—JOHN F. SPANGLER has been appointed manager of government contract sales-consumer products. He is a 21-year Philco veteran in service, product design, and field sales posts.

Ilg Electric Ventilating Co.—R. M. PROBIZANSKI has joined the New Orleans sales staff. He was recently graduated from Tulane university.

The Toledo Merchandise Co.—HERBERT SCHNELKER has been appointed sales manager of this wholesale distributor. He has been an industrial specialist with the firm since 1939.

A. Y. McDonald Mfg. Co.—D. E. BRUBAKER, formerly sales administration manager for F. E. Myers & Bro. Co., has been appointed advertising and sales promotion manager. E. J. MIQUELON, with McDonald about three years on special assignments in the sales division, has been promoted to assistant sales manager. Both will report to R. M. DODDS, newly-elected vice president in charge of sales.

Canadian Ice Machine Co., Ltd.—GORDON S. MACIVOR has been appointed general manager of manufacturing. He was formerly executive assistant.

Buffalo Forge Co. — JOHN H. GREGORY, executive vice president of The Canadian Blower & Forge Co., Ltd., and Canada Pumps, Ltd. of Kitchener, Ont., subsidiaries of Buffalo Forge, has been chosen a director of the parent company.

Metals & Controls Corp.—FREDRICK C. OCHSNER has been named a product manager by the General Plate Div. He will be responsible for the sales of the electrical contact product line. He joined the company in 1950.

Cash-Acme — WILLIAM P. KLEIN has been appointed manager of sales promotion and advertising. He was a sales engineer for Taco Heaters for five years and also for Federal Boiler Co.

Magnetrol, Inc. — FRED H. SCHAUB was elected chairman and ROBERT F. SCHAUB president.

Industrial Air Conditioning Systems, Inc. (Chicago)—J. S. SAN FILIPPO was named vice president in charge of purchasing.

Rheem Mfg. Co.—Appointment of ROBERT T. STROUP as manager of a newly-formed growth and acquisition department was announced. He will continue also as assistant treasurer.

Appliance Control Dept., General Electric Co.—WILLIAM L. MOORHEAD has been named manager—residential control sales. He has been sales engineer—heating and special purpose controls. RALPH W. GUSTAFSON was appointed manager—heating and special purpose controls product engineering. He was formerly line engineer—heating controls.

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LUBRICATION IS A MAJOR FACTOR IN COST CONTROL
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Hydronics Industry Research Points Way To Striking Material and Labor Savings

NEW YORK CITY—Industry-sponsored research on a "small-pipe" hydronic heating system is claimed to have "pointed the way to striking material and labor savings."

Reductions of up to 50% in the cost of piping installations are clearly indicated by tests conducted recently by the University of Illinois in cooperation with the Institute of Boiler & Radiator Manufacturers.

These facts were disclosed in a research report which describes a one-pipe hydronic heating system using copper tubing with diameters as small as ¼ in.

The report, issued jointly by IBR and the university, is the result of an IBR heating research project carried out during the winter of 1958-59.

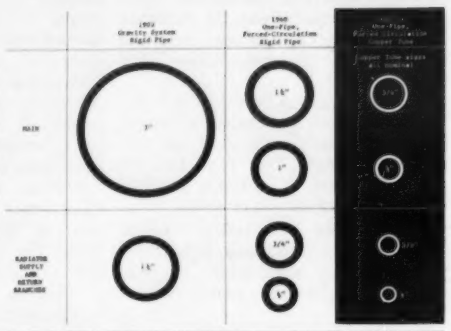

DIAGRAM of piping and tubing cross-sections, shown in scale, illustrates reduction in piping sizes for hydronic heating systems since early days of hot water heating. Largest pipe frequently used in the year 1900 was 3 in., while smallest size now used is ¼ in.

Installed in the IBR research home at Urbana, Ill., the new one-pipe system uses soft copper tubing, which is readily bent, thus eliminating many of the fittings normally required in a more conventional one-pipe system, it was pointed out.

A total of $150 was saved in installing the small-pipe system, according to the report. Cost of piping materials for a conventional system was $104.25 as compared to $87.73 for the small-pipe system. The conventional system required 63 man-hours of labor in the research home as against only 24 man-hours for the small-pipe system.

This is a saving of about 15% in piping materials and 60% in installation time. It was reported that larger savings might accrue in bigger houses, or structures requiring more complicated piping systems.

Cost estimates, which were based on experience in installing these systems in the research home, cover only the pipe, fittings, and time required to install the piping system. They do not include cost of boiler and radiation or the time necessary to install these items, except for connecting the piping system to them.

ESTIMATED INSTALLATION COSTS—NEW CONSTRUCTION
Conventional Rigid Pipe vs. Small Diameter Copper Tube

	Conventional Rigid Pipe System		Small Diameter Copper Tube System	
Item	Quantity	Cost	Quantity	Cost
Pipe or Tube	341 Ft.	$ 47.90	323 Ft.	$ 64.26
Fittings	159	56.35	85	23.47
Labor	63 Hr.	220.50	24 Hr.*	84.00
Total		**$324.75**		**$171.73**

*Estimated for new construction by installer of system in IBR Research Home.

Performance of the small-pipe hydronic system was considered comparable to the more conventional system since the measured flow rates and temperature drops were found to be very close to those observed in systems previously installed and tested in the research home.

In a supplementary report to IBR, Prof. Warren S. Harris, conductor of the IBR research program, wrote that "throughout this winter, with temperatures as low as -7° F., the performance of the small-pipe system in the IBR research home has been 100% satisfactory."

Tests were conducted in the original IBR research home, a two-story, six-room brick dwelling which has a calculated heat loss of 43,300 B.t.u.h.

A new IBR research home, a split-level dwelling, is to be formally opened in the near future.

According to the report, run-outs and risers in the small-pipe system were either nominal ¼-in. or ⅜-in. type L copper tube, depending on the capacity of the room heating unit and the length of the piping connection. The branch mains consisted of ½-in. tube, and the trunk main was ¾-in. tube. Sweat fittings were used throughout.

While the tube used in the system was smaller than ordinarily employed, the report pointed out that the maximum water velocity was less than 3 ft. per second, which is low enough to avoid water flow noise.

The system was designed to operate at a design water temperature of 215° F. with a 20° F. drop in water temperature from boiler supply to return. According to these assumptions, the report observed, it would be necessary to circulate water through the boiler at a rate of approximately 4.5 g.p.m.

However, the rate of water circulation actually was found to be about 6 g.p.m. and the temperature drop in the system approximately 17° F. The average temperature drop through the room heating units was about 15° F. These characteristics, the report stated in conclusion, were about the same as noted in conventional-type systems tested in the past.

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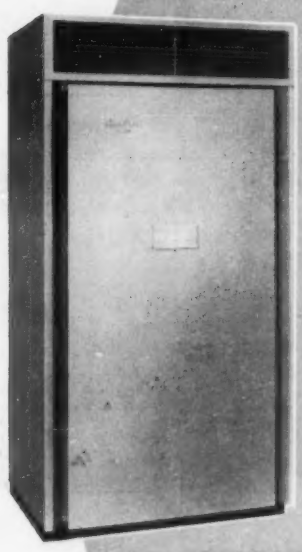

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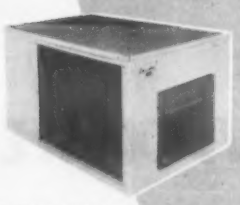

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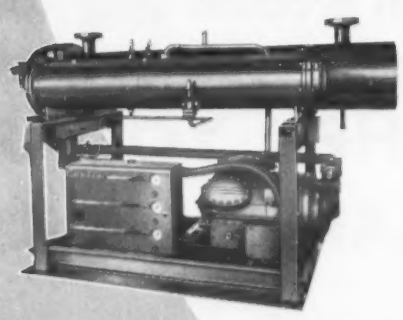

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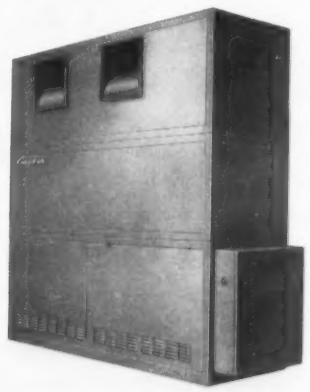

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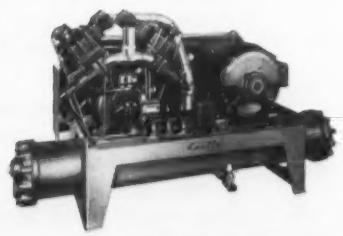

Condensing units up to 100 tons —F-12 or F-22.

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TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

'Can I Charge Liquid Into Low Side?' (3)

(A Review of Refrigerant Charging Procedures)

HIGH-SIDE LIQUID CHARGING

The dome and charging connection on some hermetic rotary compressors are high side. Liquid refrigerant charged into them passes over so much metal and has to travel such devious paths before reaching the valves that there is little danger of slugging.

Some packaged systems have a liquid line shut-off valve with a charging port that provides an easy means of charging liquid refrigerant into the system. Simply by operating the compressor and closing the liquid line shut-off valve, liquid can be drawn from the charging cylinder, through the expansion valve, into the evaporator where it is vaporized and then pumped to the compressor. Airtemp recommends this system of charging.

Carrier suggests brazing a small charging valve into the liquid line after the liquid line shut-off valve, where necessary to permit liquid line charging.

Westinghouse Electric, on its LU-125 and 150 Unitaires, uses the following method:

1. Connect the refrigerant drum to the backseating gauge port on the liquid line stop valve, and purge the charging line.

2. Turn on the condenser water pump (if used) and allow water to circulate through the condenser. If a water regulating valve is used, block it open.

3. If the system is under vacuum, stand the refrigerant cylinder with the connection up and open the drum to break the vacuum with refrigerant gas.

4. When the system gas pressure is high enough to prevent freezing temperature, invert the charging cylinder and elevate the drum above the condenser. With the drum in this position, valves open, water pumps operating, liquid refrigerant will flow into the condenser. Approximately 75% of the total estimated charge should be charged in this manner.

5. After 75% of the charge has entered the condenser, reconnect the drum and charging line to the suction gauge port on the compressor. Purge the line.

6. Make sure all refrigerant shut-off valves are open and that the water is still circulating through the condenser. Start the compressor, checking immediately that compressor motor starting characteristics are normal and that oil pressure is at least 13 p.s.i.g. above suction pressure.

7. Allow gaseous refrigerant to enter the system until the liquid line sight glass shows full flow of refrigerant. This should be done with the evaporator under full load.

Be careful not to overcharge; this may be checked by the liquid line temperature which should not have more than 10° sub-cooling at the condenser outlet.

Brunner Div., Dunham-Bush, uses the same basic procedure with a slightly different approach:

Connect the drum to the charging valve on the liquid line from the condenser. Open all solenoids electrically. Open suction line valve or valves and discharge or condenser inlet valve or valves. Close the condenser liquid outlet valve.

Open the valve on the inverted refrigerant drum slowly and allow refrigerant to flow into the system until the pressure equalizes and the flow stops. Start the compressor; it will run for a few minutes, pump down, then go off on low-pressure cutout. Immediately cut off the compressor manually.

Allow more refrigerant to drain into the system. Start the compressor; it will again pump down and go off on low pressure. Shut off the compressor manually and repeat this procedure until the system has approximately three quarters of the estimated total charge.

At this point the receiver or condenser should have a liquid level of about half the diameter of the shell.

Open the condenser or receiver outlet valve and start the compressor. Allow the compressor to run and observe the sight glass. If bubbles appear, add more refrigerant.

Load must be kept on the evaporator at all times during the charging procedure.

As can be seen from these several procedures, operation is relatively normal during liquid line charging—with the refrigerant drum, rather than the receiver supplying the refrigerant. The refrigerant travels through the system and is stored in the condenser or receiver.

Speed is the greatest advantage of liquid line charging. Danger of overcharging is its greatest disadvantage. For this latter reason, some who advocate liquid line charging suggest stopping the charging procedure and allowing the unit to run normally at intervals during the charging time.

Also, improper control of the several valves may allow development of excessive hydraulic pressures which will cause ruptured components or functional damage.

When hundreds of pounds of refrigerant must be charged, liquid line charging is the standard procedure. The classical low-side vapor charging would take a much longer time.

In all liquid charging, a suitably sized drier should be placed in the charging line.

(To Be Continued)

EEI Convention Set For April 6-8

NEW ORLEANS — Among talks programmed for the 27th annual convention of Edison Electric Institute, to be held here April 6-8, will be one on "'Climate Control' In Load Growth" by C. M. Wallace, Jr., vice president, Georgia Power Co.

Speaking at the second general session on Tuesday morning, April 7, Wallace will tackle such questions as: How will air conditioning, the heat pump, electric space heating, and other aspects of electric "climate control" affect the growth of the entire electrical industry?

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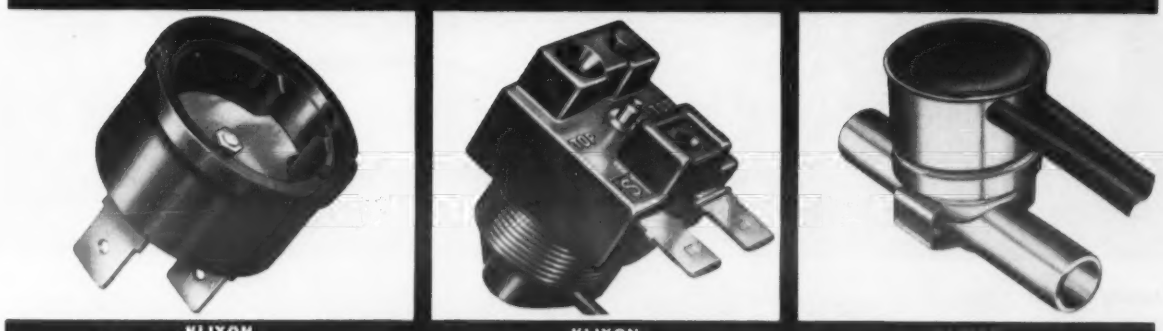

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Refrigeration Problems
And Their Solution
(As Written by Paul Reed)

Thermometer In Service Work (3)

Thermometers can also be used to determine whether or not the compressor of a water-cooled unit is operating efficiently. This is done by measuring the actual refrigerating capacity developed by the condensing unit and then comparing that capacity with the manufacturers capacity tables for that unit when operating under the same conditions.

MEASURING HEAT REJECTION OF THE CONDENSER

First we determine how much heat the condenser throws off; that is, the amount of heat taken up by the water in passing through the condenser. This is often called the "heat rejection" of the condenser.

(On some types of condensers, especially the double-tube type, some of the heat of the gas leaving the compressor is radiated to the air around the condenser; so measurement of the heat removed by the water only is not quite accurate. The percentage of the total heat that is radiated by such a condenser depends somewhat on how cold the inlet water is and how warm the air is around the condenser, and whether this air is still air or moving air.

The colder the water and the warmer the room, the less will be the air-cooling effect of the water-cooled condenser. Rarely is it as much as 10% of the total, even with the double-tube type of water-cooled condenser, and for the purpose of checking the efficiency of the compressor, the air-cooling effect may be ignored in the case of the shell and tube condensers.)

The heat removed by the water passing through a water-cooled condenser depends upon:

1. The temperature rise of the water in passing through the condenser.

2. The rate of water flow; that is, the amount of water passing through the condenser in a given period of time, such as pounds of water per minute.

TAKING WATER TEMPERATURES

The temperature rise is easily determined by an ordinary pocket thermometer, for it is simply the difference in degrees between the inlet and outlet water temperatures. With a pocket thermometer, we take the temperature of the water entering the condenser and subtract it from the temperature of the water leaving the condenser.

These temperatures should be taken as accurately as possible. The smaller the temperature rise, the more carefully and accurately the temperatures must be taken. If the temperature rise is only 10°, an error of only one-half a degree in taking the temperature of either the inlet or outlet water will result in an error of 5% in determining the heat rejection of the condenser. The same error of one degree of either the inlet or outlet water will result in an error of only 2½% if the temperature rise of the water is 20°.

It is better to use the same thermometer to take the temperature of the inlet and outlet water, for even if the thermometer is inaccurate, the *difference* will be the same as if the thermometer is absolutely accurate.

If two thermometers are used, they should both be accurate; or if inaccurate, they should both be off the same amount and in the same direction, so that the *difference* is still correct.

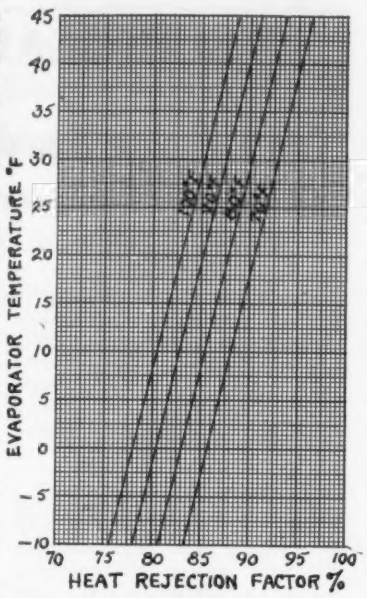


FIG. 4—Heat rejection Factors—Percentages of total condenser heat that represents refrigeration capacity of the Condensing unit.

The temperatures of the water should be taken as near as possible to the inlet and outlet of the condenser. It would be helpful if there were a "thermometer well" at the inlet. This is rarely true, however, and since the water must be flowing through the condenser, the inlet temperature of the water may be taken as that of the water flowing from a faucet near the inlet of the condenser.

However, the outlet of the condenser should be disconnected from the drain line if the latter is long. If it is quite short, saw two or three feet, the outlet water temperature may be taken at the outlet of the drain line, thus making it unnecessary to disconnect the drain line from the condenser.

WEIGHT OF WATER IN POUNDS PER MINUTE

The amount of water can be measured by allowing the outlet water to flow into a container such as a bottle or bucket. The size of the container will depend upon the size of the condensing unit and the temperature rise in degrees.

For small units, a quart milk bottle may be large enough, especially if the temperature rise is relatively great—say 25 or 30 degrees. For larger units, the container must, of course, be larger, especially if the temperature rise of the water is relatively small—say 10 or 12 degrees, for a small temperature rise requires a greater water flow for the same amount of heat taken on by the water.

A good rule is to use a container that will hold at least as much water as flows from the condenser in 15 seconds—a quarter of a minute. The longer the time, the greater will be the accuracy, for a small error of one-half pound in 50 pounds of water will result in a smaller percent of error in the result than an error of one-half pound in 20 pounds of water.

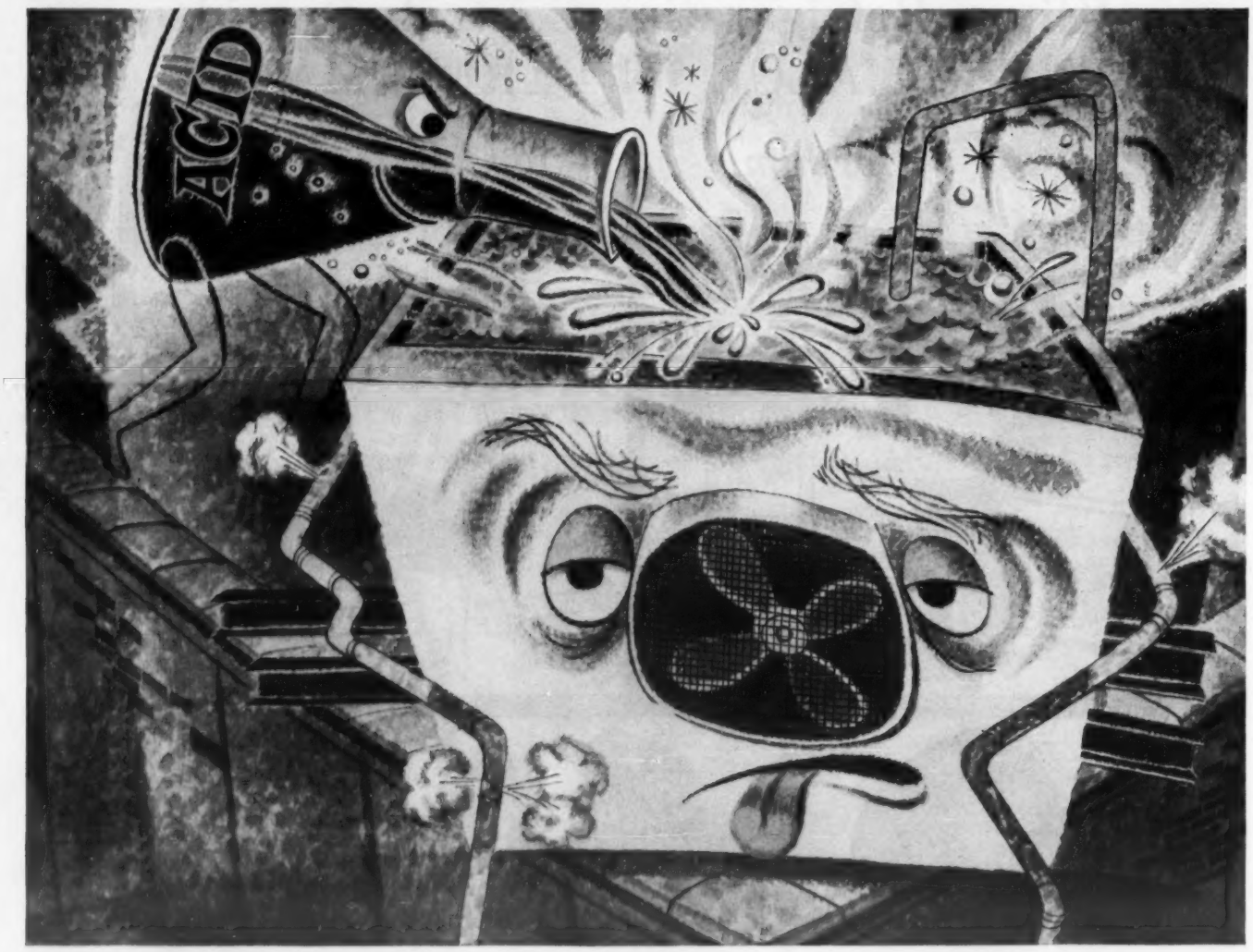
The container should first be weighed empty, and then at the end of 15 or 30 seconds, a minute or for whatever length of time the test continues.

PRESSURES SHOULD BE CONSTANT

Insofar as possible, the test should be taken (the temperatures read and the water measured) during a period while the suction and head pressures are "in equilibrium"; that is, while they remain constant for several minutes —the longer the better.

Capacities change as either suction or head pressures change; so if either the suction or head pressures rise or fall during the period of test, the results will not be accurate.

If the system has a quick pull-



BEFORE YOU BUY, THINK:

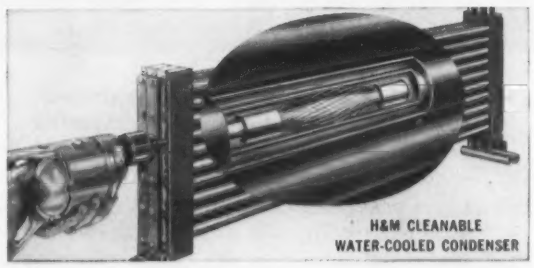
Will acid upset your cooling water system?

NOT if your water-cooled refrigeration condensers are cleanable mechanically like Halstead & Mitchell's

Scale and sludge deposits seriously reduce heat transfer in condensers and affect system performance unless removed. Deposits can be cleaned from H&M water-cooled condensers safely with a simple, mechanical tool—faster, more completely and at less cost! No need to risk acid damage to condensers, cooling towers and pumps.

Halstead & Mitchell condensers have brass headers which are easily and quickly removed for cleaning. Seamless copper tubing is arranged in double-tube design for true, positive counterflow heat exchange. U/L approved, condensers are readily set up in racks with multiple condensing units. Ask your local wholesaler for complete information, or write to Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pennsylvania.

Water-Cooled Condensers · Cooling Towers · Air-Cooled Condensers · Finned Coil Products



HM Halstead & Mitchell

down, it will be difficult to check the capacity by this method. Air conditioning systems whose suction and discharge pressures stay constant for long periods can be tested quite accurately.

TEMPERATURE RISE TIMES POUNDS GIVES B.T.U. OF HEAT

After we have determined the temperature rise and the rate of water flow in *pounds* of water per minute, we simply multiply the two together, which gives us the B.t.u. per minute that the water has taken from the condenser, for a pound of water in rising one degree F. has absorbed one B.t.u.

For example: we are testing a 3-hp. water-cooled unit on a small store cooler, having a suction pressure of 42 p.s.i.g. and a head pressure of 100 p.s.i.g. (R-12). The temperature of the inlet water is 63° F. and of the outlet water is 82° F., so the temperature rise is 19° F. We caught 17¼ lbs. of water in exactly 30 seconds, which is equivalent to 34½ lbs. per minute. Thus the B.t.u. absorbed by the water is at the rate of 655 B.t.u. per minute (34½ × 19) or 39,300 B.t.u. per hour (655 × 60).

SELECTING THE HEAT REJECTION FACTOR

This is the total heat rejected by the condenser. What part of it came from the suction gas and thus represents the capacity of the compressor; and how much of it is due to the heat of compression?

This could be determined by using the saturated and superheated heat contents of the refrigerant as determined from the refrigerant tables or a Mollier diagram. Accurate results could be obtained in this manner, but it is a bit complicated for ordinary field use.

An easier and fairly accurate way is by using a percentage known as a Heat Rejection Factor, taken from curves worked out by the author, based on the heat values of the refrigerant as referred to above. These are for R-12 but can also be used for R-22 and methyl chloride with sufficient accuracy.

The head pressure is 100 p.s.i.g., which corresponds to a condensing temperature of 90° F. (from the refrigerant tables at saturation). The suction pressure is 42 p.s.i.g., which corresponds to an evaporator temperature of 45° F.

In Fig. 4 we find four curves for 70, 80, 90, and 100 degree condensing, so we use the 90° curve. Running over from the left from 45° to the 90° curve and then downward, we find the heat rejection factor to be 91% or .91 (91 hundredths). Thus .91 of the total heat rejection represents the heat removed from the evaporator, and .09 represents the work done on the gas in compressing it.

Therefore, the capacity of the condensing unit is 35,763 B.t.u. per hour (39,300 × .91). If we compare this to the manufacturer's rating table, we find that he shows capacity of 36,800 B.t.u. per hour for the unit at 45° evaporator and 90° condensing. This is about as close as we can expect of a field test. We conclude, therefore, that the compressor is O.K. and is doing all that can be expected under the conditions.

(To Be Continued)

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

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California RSES Association Set Plans For April 9-12 Santa Barbara Meeting

SANTA BARBARA, Calif.—Arthur Hess, Dan Gott, Richard Dawson, Ray Field, and Jerry Braden are among the speakers for the 14th annual convention of the California Association, Refrigeration Engineers Service Society.

The convention will be held here April 9-12 at Miramar convention hall south of Santa Barbara on Highway 101, the coast highway.

Letters of invitation are going to the entire membership of RSES in Arizona, California, Nevada, and Utah.

Joe Gerdes of Santa Barbara, a director, said educational meetings will be held Friday afternoon, April 10, and all day Saturday.

Wives, auxiliary members, have a full-time program Friday and Saturday including joint features such as the Friday morning tour of the world's largest orchid ranch, three Saturday morning educational talks of general interest, and the annual dinner-dance Saturday evening.

Especially for the ladies is a garden tour conducted by the Chamber of Commerce to large estates and formal gardens Friday afternoon, and a luncheon Saturday at Westmont college.

Quarterly meeting of the board of directors will be held Sunday.

Presentations scheduled for Friday afternoon include "Solenoids" by Dan Gott, western regional manager for Detroit Controls; "Air Conditioning Control Circuits," by Ray Faille Field, General Controls Co.; "Water Treatment" by Robert Fredericks of Denco Chemicals, Fresno; and "G-E Leak Detector," by Gene Werbick, sales engineer, Braun Chemical Co.

The Saturday morning program lists talks on "Selling Yourself" (by Richard Dawson of Richard S. Dawson Co., Los Angeles), better telephone usage (by Darlene Irwin, public relations supervisor, General Telephone Co.), and "Aspects of Bank Credit and the Economic Situation" (by Robert Marchman, manager, Buena center branch, Bank of America, Ventura, Calif.).

A talk on "Heat Pumps," by Arthur Hess, president of Hess, Greiner & Polland, Los Angeles, will start the Saturday afternoon session. Next will be a discussion on new developments in large remote condensing units, their installation, and service, by Jerry Braden, development and application engineer, Dunham-Bush, Inc.

An "Information Please" feature, with a panel of experts, will wind up the session.

Trane Appoints H. Corbyn Rooks

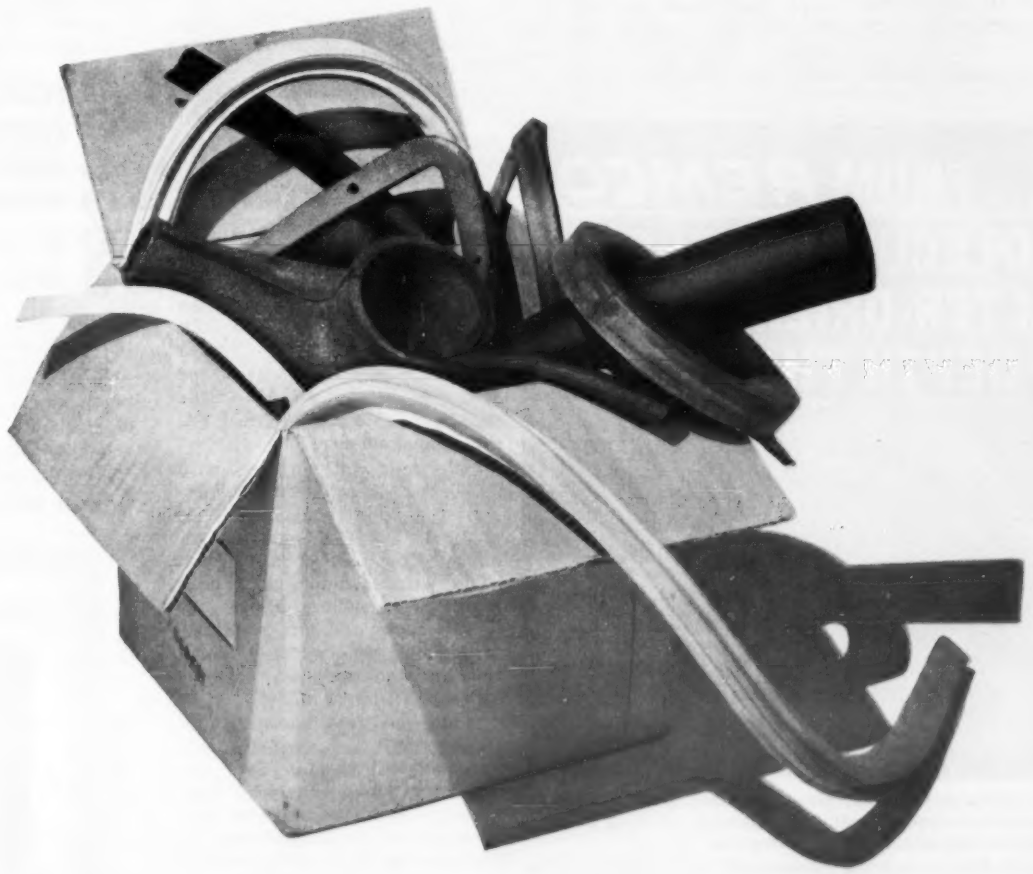
LA CROSSE, Wis.—Appointment of H. Corbyn Rooks to vice president, engineering at The Trane Co., has been announced.

Rooks joined Trane in 1934. Since 1950, he has been vice president, heat transfer sales.

Rooks succeeds Ray E. Lucey who retired March 1. Lucey had been a vice president of Trane.

According to Minard, Rooks takes charge of the division responsible for the firm's multi-million dollar product development program, and also for the Trane research laboratory.

B.F.Goodrich



If it sweats, rattles, shakes or leaks . . .

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Flexible Ducts Blow Hot and Cold At New Jersey Drive-In Theater

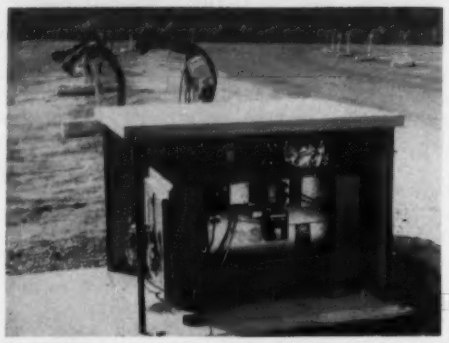
ENGLEWOOD, N. J.—A combination heating and air conditioning unit for individual cars in drive-in theaters has been unveiled by BTU Industries, Inc. here.

James M. Relph, president of the firm, said the new system, developed by Jet-Heet of Englewood, uses forced, filtered air from a small-diameter flexible duct to heat or cool a parked car.

"The heart of this heating system," it was explained, "is the Jet-Heet furnace that is now being used in Operation 'Deep Freeze' in Antarctica by the U. S. Navy. The Navy ordered 100 of these furnaces to take care of most of its heating needs at the South Pole.

"For the drive-in theater, one oil-fired furnace is used to heat 30 cars, at a cost of only one to two cents per car per night," Relph stated.

Leading from the furnace are master insulating ducts, developed in collaboration with Standard Plastics of Fogelsville, Pa., that have been installed under the ground parallel to the parking ramps. Small flexible pipes attached to the risers from the master duct bring the warm air right into the car.



SAME JET-HEET furnace used by Navy in Antarctica supplies heat to 30 cars for one to two cents per car in New Jersey drive-in theater.

CLIMATE CONTROL OUTLET is easily accessible at speaker post from inside car.

SMALL FLEXIBLE ducts bring filtered, dehumidified, heated, or cooled air into each car from underground duct.

The air is dispersed through a specially designed air diffuser styled to hook over the car window alongside the speaker.

"The design of this diffuser keeps the window slightly ajar for the used air to be discharged. This circulation prevents any clouding up of the inside car windows when the heating system is in operation, and insures uniform heating of the entire car," it was stated.

"A small control damper on each diffuser allows the car occupants to regulate the amount of heating or cooling they desire. Once the diffuser is installed in the window it takes only a few minutes to warm up or cool off a car."

A 500-car heating unit has been in operation for the past few months at the Totowa Drive-In Theater located on Route 46 in Totowa, N. J. The theater is operated by the Eastern Management Corp.

"We are well satisfied with our initial installation at Totowa," Sheldon Smerling, vice president of Eastern Management, was quoted as stating. "The patrons here have been highly enthusiastic about our new heating and air conditioning system. And we have found the maintenance cost for the system is almost nil."

A compact, electric air conditioning unit attaches to each furnace and the same duct system is utilized to convey high velocity, dehumidified, low temperature air to the cars parked in the theater in the summertime, Relph said.

He pointed out that the insulated ducts and pipes eliminate any condensation problems for the air conditioning system, and even more important, a changeover from heating to cooling is instantaneous after installation since each unit operates independently through the common system.

WHAT . . WHEN . . WHERE

Gas Appliance Manufacturers Association
April 1-3, Americana hotel, Bal Harbour, Fla.

Refrigeration Research Foundation
April 2-5, Statler and Mayflower hotels, Washington, D. C.

Mechanical Contractors of America Convention
April 28-May 1, Shoreham hotel, Washington, D. C.

Oil-Heat Institute of America
April 29-May 4, Olympic hotel, Seattle.

Air-Conditioning & Refrigeration Institute
May 3-6, The Homestead, Hot Springs, Va.

Industrial Heating Equipment Association Meeting
May 17-20, The Homestead, Hot Springs, Va.

Sheet Metal & Air Conditioning Contractors Annual Convention
May 28-30, Broadmoor hotel, Colorado Springs, Colo.

Institute of Appliance Manufacturers
June 1-3, Netherland-Hilton hotel, Cincinnati.

American Society of Heating, Refrigerating & Air Conditioning Engineers
June 22-24, Lake Placid Club, Lake Placid, N. Y.

NOW you can stop SCALE, RUST and ALGAE
in water-cooled air conditioning and recirculated-water heating systems *this easy way!*

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3. INHIBITS FORMATION OF NEW SCALE
4. RETARDS RUST AND CORROSION
5. REPLACES COSTLY ACID TREATMENTS
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Economical . . . highly effective! NOCOR Formula 800 has been tested and approved by maintenance engineers and service companies. Find out for yourself how this remarkable formula can help *you* to greater profits. Write today for full details.

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NOW . . FROM REMCO MOLECULAR SIEVE FILTER-DRIERS with DEPTH FILTRATION

Utilizing advanced design Molecular Sieve cartridges, these new Remco Filter-Driers combine unequalled drying efficiency, effective acid removal, generous flow capacity and *depth* filtration.

The massive depth filter completely removes all scale, sludge, carbon and other particles as small as 100 microns. Molecular Sieves adsorb and retain large quantities of moisture even at refrigerant temperatures of 140F, and keep moisture concentrations below 10 ppm. Acids are reduced far below dangerous corrosion limits.

Compact in size, the filter-driers are U/L Approved and may be used for Refrigerants 12 or 22, Carrene or methyl chloride. Working pressure is 500 psi; minimum bursting pressure, 2500 psi.

REPLACEABLE CARTRIDGE TYPE units use an "O" ring for a positive, leakproof flange seal. From 3 to 40 tons, with ⅜" thru 1⅝" sweat connections.

SEALED TYPE filter-driers are available in 1 to 12 tons, with ¼" thru ⅝" flare and ⅜" thru ⅞" sweat connections.

"T" FITTING TYPE in 2 to 6 tons, are readily adaptable to systems using conventional "T" driers.

Remco Molecular Sieve Filter-Driers are available at leading wholesalers. Ask your wholesaler for more information, or write for Bulletin MS-1. Remco, Inc., Zelienople, Pa.

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ASHRAE Consolidation Ahead of Schedule

(Concluded from Page 1, Col. 4)

the regional level.

It was reported that a series of regional meetings will be held this spring, starting with Montreal, April 20. Other meeting sites and dates are Denver, May 11; Little Rock, May 13; and San Francisco, May 15-16.

On the national and over-all picture, Cecil Boling, national ASHRAE president, declared that "once the merger had been voted in, the differences in opinion about it vanished, and all members seemed eager to work to make the merger effective as soon as possible, and to start working for the objectives which the society will seek in the new organization.

Membership Applications Doubling Fall Rate

As evidence of the general approval which members of the industry are giving the new society, Boling said that membership applications since the merger are running twice as much as they had been last fall.

Because the legal details of the merger had been completed more swiftly than had been anticipated, consideration had to be given to the rearrangement of some planned commitments.

On national meetings, for example, a semiannual meeting that ASHAE had scheduled for June in Vancouver has been postponed (possibly to be held in June, 1960, although this is not yet definite). The annual meeting of the ASHRAE will be held in Lake Placid, N. Y., June 22-24. A semiannual meeting scheduled by the ASRE for Atlantic City in November has been canceled, and the next semiannual meeting of ASHRAE will be held Feb. 1-4 in Dallas, in conjunction with a regional exposition.

One more issue each of the "ASHAE Guide" and the "ASRE Data Book" will be published following which a single ASHRAE Guide will be published, possibly as a series of Applications Data Books, with a book on fundamentals issued periodically.

One of the objectives of the merger, Boling stated, had been to increase the research activities of the society and to develop a larger budget for this. While it is impossible to state definitely the exact amount of money available for the research program at this time, Boling said that the probable budget for the society's fiscal year starting July 1 would be $300,000.

One reason for the need of a merger of the engineering society is the continuing growth of the air conditioning and refrigeration industry, Boling said, and he discussed some of these growth factors.

The commercial refrigeration industry continues to have a steady growth in volume, averaging around 5 to 6% a year over a period of several years, it was stated.

The food supermarket has emerged as the principal growth factor in this field, and with the advent of large supermarkets, the contractor organization installing and servicing such installations has tended to grow to larger proportions. New applications for commercial refrigeration equipment are another growth factor.

Boling minimizes the possibility of any effect of the development of a market for irradiated foods in the foreseeable future, declaring that private industry is virtually abandoning its experiments in this field.

Air conditioning has had a spectacular growth in the past seven years, and Boling said there are many factors which indicate there will be no slowdown. Two main factors which the ASHRAE president believes will help the growth in the next decade are (1) the probability of air conditioning in schools at all levels of education and (2) air conditioning of industrial plants.

Air conditioning in such places will have an effect on the continued growth in the residential and commercial markets.

Present-day installation of air conditioning equipment, particularly in the commercial and industrial field, is marked by the dominance of the large contractor who can do both cooling and heating and who has sufficient facilities and capabilities to do most of the job with his own personnel.

Regional Activity To Be Intensified

In the workshop session, Arthur Hess, ASHRAE first vice president, who has also been president of both ASRE and ASHAE, explained that the regional activity in ASHAE has been considerably greater than in ASRE, and will be continued at probably an even more intensive level in ASHRAE.

The regional setup was created to provide a channel of communication from the rank and file of membership up through the national offices, Hess explained. National officers spend many years "going through the chairs" as the saying goes in association work, and get remote from the members. The regional activity provides a means of getting them in closer contact.

Regions develop activities which permit them to discuss their problems, and develop procedures to put their ideas before the national officers, through two methods:

(1) Through a "workshop" type of round table discussion.

(2) Through various committee operations.

In addition to discussing such matters as how to develop meeting programs, handle finances, and develop proper chapter agenda, matters these regional officers wish to place before the national society are presented to the regional central committee and are sometimes settled there.

All this points up the importance of the Regions Central Committee (headed by D. D. Wile, ASHRAE vice president) said Hess. One of the most important functions of the committee will be to assist in the establishment of regional boundaries, which activity must be completed by September. These regional boundaries will be important in terms of the allotment to be made from the national office.

Wile urged the local consolidated chapters to develop their by-laws as soon as possible and to submit them to the national offices for approval.

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A low-cost, lightweight "Freon" leak detector!

Pocket-sized Halide Leak Detector is the *smallest, easiest-to-use* tool available today to detect hard to find "Freon" refrigerant leaks. Just light the Halide torch and place hose at point of suspected "Freon" leakage. Even traces of "Freon" turn the light blue flame a vivid green. Each butane charger lasts 30 minutes. "OFF-ON" control. Also can be used as a blow torch, soldering tool.

Height: 6½"
Weight: 5 oz.
Chargers: 49¢ per box of 2
Price: $8.95

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(10 ton AIRVEC Installation on roof of Daylight Grocery, Jacksonville, Fla.)

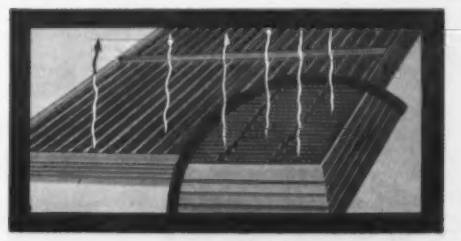
EDWARDS AIRVEC

...the air-cooled refrigerant condenser that eliminates fans, cooling towers, noise and maintenance.

For condensing refrigerants Edwards AIRVEC offers a simple, economical method that makes possible, for the first time, the elimination of fans, motors, and cooling towers! Because of its unique operating principle, AIRVEC requires no electrical power—the refrigeration or air conditioning system using AIRVEC requires 20% less power. With no moving parts there is no need for belts, pumps, fans or costly maintenance—and it's absolutely silent. And water is not used in the AIRVEC so there is no water treatment problem or periodic cleaning of condensers and towers.

The size of the condenser is virtually unlimited: you just assemble single AIRVEC elements in a single plane until the required area is covered. Initial installation costs are lower, too. And AIRVEC is so light that little or no special rigging is required.

Its low, unobtrusive silhouette blends easily with any architecture, leaving more useable space within the building proper. Roof loads are negligible so no extra beams are needed. Edwards AIRVEC Condensers are available in nominal sizes of 1.25, 2.50 and 3.75 tons and larger assemblies up to hundreds of tons.



The refrigerant gas is cooled and condensed by the movement of convection air moving upward through the AIRVEC condenser.

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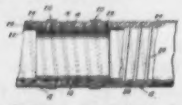
World's Largest Manufacturer of Water-Cooled Condensers for Packaged Equipment.

PATENTS

Week of Nov. 25 (Concluded)

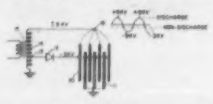
2,861,598. FLEXIBLE DUCT CONSTRUCTION. Stephen D. Carder, Jr., Oklahoma City, Okla., and Richard D. Savacool, Camden, Ark.



In a flexible insulated duct or the like comprising bendable inner and outer spaced insulating heat reflective metal wall portions, the inner wall portion having a smooth periphery, a single layer of bendable fibrous insulating material interposed between said wall portions. . . .

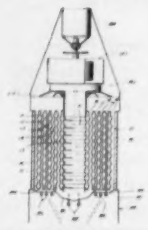
2,861,648. ELECTROSTATIC PRECIPITATORS. Arnold C. Fields, Medfield, Mass., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.

1. An electrostatic precipitator comprising an ionizer wire, a plurality of collector plates, alternate ones of said plates being grounded and the other ones of said plates being insulated from said alternate plates, a pair of said alternate plates having portions on opposite sides of said wire and forming non-discharging ionizer elec-



trodes, a step-up transformer having a secondary winding connected at one end of said wire and at the other end to the other ones of said plates. . . .

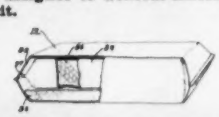
2,861,781. HEAT EXCHANGE APPARATUS. Leonard P. Cohen, Bellaire, Texas, assignor of one-tenth to Joseph P. Woerner, and one-fourth to Charles C. Lightfoot, both of Harris County, Texas.



1. In heat exchange apparatus a plurality of tubular, hollow-walled, receptacles arranged one within another in spaced apart relation to form passageways of tubular shape between the receptables, said receptacles being movable axially relative to each other, and means on the receptacles extending into the passageway and movable with the receptacles into and out of positions to form a restriction in the passageway.

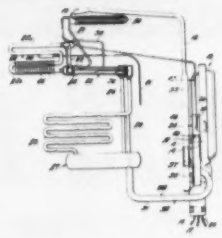
Week of Dec. 2 and 9

2,863,179. REFRIGERATING APPARATUS. Richard S. Gaugler, Dayton, Ohio, assignor to General Motors Corp., Detroit.



1. In a refrigerator, an outer wall, an inner wall spaced from said outer wall, insulation between said walls supported by said walls, said insulation comprising flexible bag means snugly engaging said walls, filler material within said bag means having voids therein, and a gas filling said voids, said gas having a coefficient of thermal conductivity less than that of air, said bag means comprising a plastic film having a vapor deposited metallic coating thereon not more than .00001 inch thick forming a barrier to the passage of said gas, air and moisture.

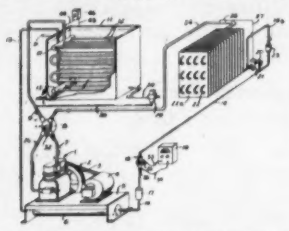
2,863,298. ABSORPTION REFRIGERATION. Axel Gosta Hellstrom, Johanneshov, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden.



1. Absorption refrigeration apparatus comprising an absorption liquid circuit including a first vapor-liquid life pump for normally effecting circulation of liquid in said circuit, means including a second vapor-liquid lift pump for raising absorption liquid from said circuit to a level in the apparatus normally free of such liquid....

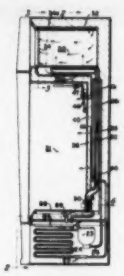
2,863,299. REFRIGERATION SYSTEMS. Joseph L. Ammons, Amarillo, Texas.

1. In a condenser unit for a refrigeration system having a compressor therein, a condenser coil tank, a condenser coil in said tank, said condenser coil being connected to said compressor in fluid communication to admit refrigerant gas from said compressor into said condenser coil in said tank near the top and at a side thereof, said condenser coil having a downwardly meandering path to a point near the bottom of said tank, a refrigerant outlet pipe connected to said



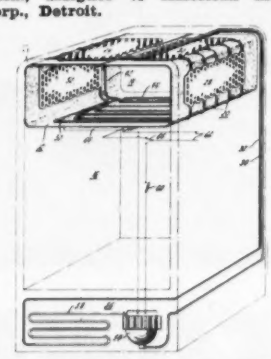
condenser coil near the discharge end thereof. . . .

2,863,300. REFRIGERATING APPARATUS. John M. Murphy and Leonard J. Mann, Dayton, Ohio, assignors to General Motors Corp., Detroit.



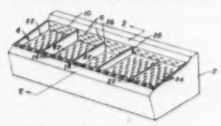
1. In combination, a below freezing compartment; a refrigerating above freezing compartment; a refrigeration system including an evaporator and refrigerant liquefier in refrigerant circulating relationship. . . .

2,863,301. LUBRICANT CIRCULATION IN REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to American Motors Corp., Detroit.



1. A refrigerating system having a low pressure side and a high pressure side, said system including a refrigerant compressor for withdrawing low pressure refrigerant from said low pressure side, a valve for controlling said withdrawal, a chamber for lubricant within said refrigerant compressor, said chamber being in communication with said low pressure side and having means for restricting communication therebetween when the pressure in said chamber is greater than in said low pressure side. . . .

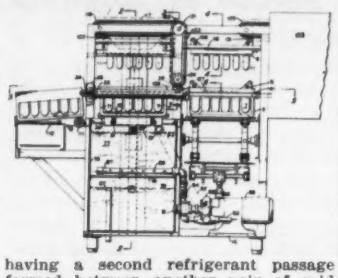
2,863,302. DISPLAY CASE. Harry A. Morris, Trenton, N. J., assignor to C. V. Hill Co., Inc., Trenton, N. J.



1. A refrigerated display case comprising a display chamber, means for cooling air in said display case, means for forcing said cold air into said chamber adjacent the bottom thereof, a perforated article supporting shelf adjustably positioned within said chamber above the bottom thereof to support articles to be displayed and a deflecting vane pivotally secured to said shelf and inclined downwardly and rearwardly from said shelf to direct cold air upwardly through said shelf and about the articles on said shelf.

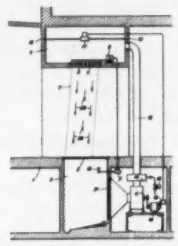
2,863,303. REFRIGERATING APPARATUS. Clifford H. Wurtz, Dayton, Ohio, assignor to General Motors Corp.

4. In a refrigerating system, an evaporator, a compressor, a condenser, said evaporator comprising a roll forged multiple plate unit forming the bottom and at least one side wall of a refrigerated compartment and having first refrigerant passages formed between a first pair of said plates and



having a second refrigerant passage formed between another pair of said plates. . . .

2,863,373. DEVICE FOR PRODUCING A ROOM-CLOSING AIR CURTAIN. Ernst Steiner, Zurich, Switzerland.



1. A device that can direct air across an opening to form an air screen of substantial portion of said opening and that comprises an air inlet chamber. . . .

(To Be Continued)

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

FIELD SERVICE REPRESENTATIVE

Family man preferred. Age 25-35. Willing to relocate and travel. Minimum qualifications 6 years commercial refrigeration experience and educational background. Excellent working conditions and employee benefits.

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Personnel Department
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Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzalez—25¢ each.

Mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

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One of America's most progressive manufacturers of refrigeration and air conditioning equipment constantly conducts quality tests of all materials purchased. Of the five leading suppliers of copper tubing their tests proved *only* Precision Tubing was rated "Excellent" in all specification requirements! . . . yet Precision Tubing costs no more.

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Write for folder "Small Tubing For Industry" to Dept. 5, Precision Tube Company, Inc., North Wales, Penna.

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to set up distributors on a sensational drink dispenser, only one of its kind. Will not conflict with your present lines. All territories in U.S. open except N.Y.-New England, Chicago area and West Coast. Earnings large with exclusive contract territory. Refrigeration and beverage sales representatives especially suitable. Advise territory you now cover. BOX A6220, Air Conditioning, Heating & Refrigeration News.

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ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

MANUFACTURER'S AGENT—38, BSE, professional engineers license. Experience includes 4 years as designer of automatic controls and 7 years district manager selling refrigeration and heating OEM and wholesale accounts in Southeastern states. Desires to operate from Atlanta handling lines as agent. BOX A6221, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

DISTRICT SALES manager for New York-Philadelphia market. Selling water coolers and dehumidifiers to distributors. Must have experience selling to wholesale trade. Will also call on architects and engineers. Refrigeration experience preferable. Man selected will live in territory. THE EBCO MANUFACTURING COMPANY, Columbus 13, Ohio.

WANTED: YOUNG man with tested commercial cabinet and designing engineering experience. Must be graduate BSME or experience equivalent with actual metal layout and executive drafting tooling background. Furnish complete resume education, employment experience. Real opportunity for the right man—age range 30-45. New York area. Write: P. O. BOX 188, Woolsey Station, Long Island City 5, New York.

REFRIGERATION ENGINEER for product engineering section of small L. I., New York company. Prefer man with experience as product or production engineer of packaged industrial products including refrigeration and compressed air. Resume and salary requirements to BOX 244, Massapequa, New York.

REFRIGERATION ENGINEER for Midwest super market operator. This is a permanent 52 weeks a year position. Mostly resident. Very limited travel with expenses paid. We want a man under 40 with excellent knowledge of electricity and refrigeration. Compensation commensurate with qualifications. Please inform us fully giving references we may contact. Our address is P. O. BOX 334, Richmond, Indiana.

ENGINEER REFRIGERATION Controls—To head a department on design and development of commercial refrigeration control valves of all types; national corporation with midwestern manufacturing and engineering facility; salary and bonus commensurate with work background and ability. Send full details, qualifications and personal data, to BOX A6172, Air Conditioning, Heating & Refrigeration News.

APPLICATION AND sales engineer, technical graduate or equivalent wanted with refrigeration experience and sales. Age 25-32. Interesting work calling on contractors, wholesalers and air conditioning and refrigeration manufacturers in established territories for nationally known control manufacturer. Starting salary based on experience plus commission after indoctrination. All replies will be kept confidential. Address reply to BOX A6207, Air Conditioning, Heating & Refrigeration News.

WANTED, SALES representatives. Calling on users of copper refrigeration tubing. Excellent opportunity offered by leading importer. Tubing made in strict accordance with ASTM specifications. In reply state age, experience, lines now carried, to BOX A6216, Air Conditioning, Heating & Refrigeration News.

AIR CONDITIONING product engineer—Leading manufacturer of air conditioning and refrigeration equipment has opening for project design engineer in newly established engineering section on heat pump and residential package air conditioners. Desire graduate engineer with at least 2 years' design experience on residential air conditioners and refrigeration products. All replies held in strict confidence. Send short resume to BOX A6217, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER, graduate preferred, selling to original equipment manufacturers refrigeration components and accessories. Must have experience in design engineering, refrigerating systems. Must possess sales ability. Relocation not necessary. Please include resume with reply. BOX A6219, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT WANTED

WANTED—WATER cooler and window A. C. parts and service franchise. Now operating heating and air conditioning service. Investigation welcome. Write DART HEATING AND A. C., 17833 Strasburg, Detroit 5, Mich.

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RESIDENTIAL & COMMERCIAL air conditioners—air cooled 1 ph.—230V. 2 hp. highside with horiz. evap. $357.00; 3 hp.—$489.00; 4 hp.—$684.00; 5 hp.—$761.00. 2 hp. self contained horiz. units $306.00; 3 hp.—$504.00; 4 hp.—$599.00. Additional 5% discount for quantities of 5 units one order to one destination. ARCTICAIRE MFG. CO., 2201 Grand—K. C., Mo., Telephone BA 1-7055.

COMPLETE HIGHSIDE and low side refrigerator systems. P91 compressor 115 V. 50/60 cy. F-12 Evaporator: 15¾" wide x 5¾" high x 12¾" deep, and static condenser. S-88 compressor 115 volts 60 cy. Freon 12; Evaporator 11" wide x 11½" deep x 9" high, and static condenser. Systems are charged and ready for installation. Sold $36.00 each FOB Chicago, Illinois. Send for free catalog on money saving refrigeration values. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

Ratios of Products to Total Volume, 1949-1957: 1958

		1949 %	1956 %	1957 %	1958 %
1.	SD display cases, closed	7.3	2.2	2.1	2.5
2.	DD display cases, closed	15.3	4.3	3.2	2.4
	Total, this classification	22.6	6.5	5.3	4.9
3.	SD display cases, open SS	8.2	5.5	5.2	4.6
4.	DD display cases, open SS	17.6	9.2	9.8	9.9
5.	Multiple deck display cases, open SS	..	11.7	12.4	14.8
	Total, this classification	25.8	26.4	27.4	29.3
6.	All other display cases	1.6	.6	.7	.4
	Total, all above types	50.0	33.5	33.4	34.6
7.	SD vegetable cases, open SS	9.0	5.9	6.7	6.6
8.	DD vegetable cases, open SS	..	4.4	3.7	3.8
9.	Vegetable refrigerators, closed	.9	1.2	.8	.5
	Total, this classification	9.9	11.5	11.2	10.9
10.	Low temperature refrigerators, open SS	13.9	31.8	30.8	31.1
11.	Low temperature refrigerators, closed	.5	.4	.5	.5
	Total, this classification	14.4	32.2	31.3	31.6
12.	Upright freezers	..	2.4	2.4	1.7
13.	Dairy refrigerators, wall boxes, etc.	3.8	2.0	1.8	1.8
14.	Reach-in refrigerators	9.8	7.1	7.7	6.8
15.	Walk-in coolers	6.5	7.4	7.9	7.8
16.	All other C-R equipment	5.6	3.9	4.3	4.8
		100	100	100	100

NOTE: Government contract shipments excluded from all totals.

Commercial Ratios--

(Concluded from page 1)

uct to total shipments, multiple-deck open-type self-service display cases continued a growth pattern, climbing to 14.8% of total shipments, compared with 12.4% in 1957.

Low temperature display cases, which have had a spectacular growth in the last decade, revealed a steadiness in the market for this equipment, showing a slight increase to 31.6% of the total from last year's figure, which had dropped slightly below the peak figure of 32.2% reached in 1956.

Most of the other changes in ratios were not particularly significant. Single-duty closed-type display cases were up slightly, double-duty closed-type display cases were down from 1957. Open-type single-duty cases dropped but open-type double-duty models were up very slightly.

Reach-in refrigerators were down from the 1957 percentage figure, which had shown an increase over 1956. Upright freezers declined somewhat, dairy refrigerators and walk-in coolers held about even with the ratio figures for the previous year.

Outside Surface of Tubing Upped 13%, Wolverine Claims

ALLEN PARK, Mich. — A 13% increase in the outside surface area of Wolverine "Trufin Admiralty Type S/T" was recently announced by L. G. Fox, manager of product sales for Wolverine Tube, Div. of Calumet & Hecla, Inc.

The increase was made coincident with the release of the new product reference catalog on Trufin, the integral finned tube originated and developed some 30 years ago by Wolverine Tube, Fox said. He revealed that the surface increase in admiralty was the result of a redevelopment of fin contour.

"This added increase in surface will result in savings in tube required in shell and tube heat exchangers using admiralty Trufin tube," it was stated. "This brings the outside surface equal to that of copper Trufin of the same size."

Air Distribution Requirements In Year-Round Air Conditioning

By Frank D. Klein, Chief Engineer, Governair Corp.

The foregoing comparison between DRY air and WATER VAPOR is redrawn that the importance of each is understood, for in dealing with the "conditioning" of air and the transition of its condition by cooling, a mixture of the two is dealt with. The condition of the air entering the DX coil, under a given set of refrigerant operating conditions has everything to do with the condition of the air leaving the coil. Therefore the basic fundamentals of psychrometry and the use of the Psychrometric chart are the foundations for selecting and evaluating the DX coil itself.

In considering the coil, the process involved is SENSIBLE COOLING only, which is the direct opposite of SENSIBLE HEATING. i.e., cooling at a constant humidity. This is a simple and practical appliance of cooling without dehumidification.

The process involves supplying air to a space, at lower temperature than that of the space, which by absorbing during the mixing process the equivalent sensible heat gain of the space, brings about a maintenance of a pre-selected or design temperature for the space, on a dry bulb basis, along the line of constant dewpoint. See Fig. 60.

The example is:

1. (a) The air supply on the coil being 85.0° F. Dry Bulb.
   (b) The air supply on the coil being, 69.0° F. Wet Bulb.
   (c) The air supply leaving the coil having a 61.0° F. Dewpoint.
2. (a) The air supply leaving the coil being, 67.0° F. Dry Bulb.
   (b) The air supply leaving the coil being, 69.0° F. Wet Bulb.
   (c) The air supply leaving the coil having a 61.0° F. Dewpoint.

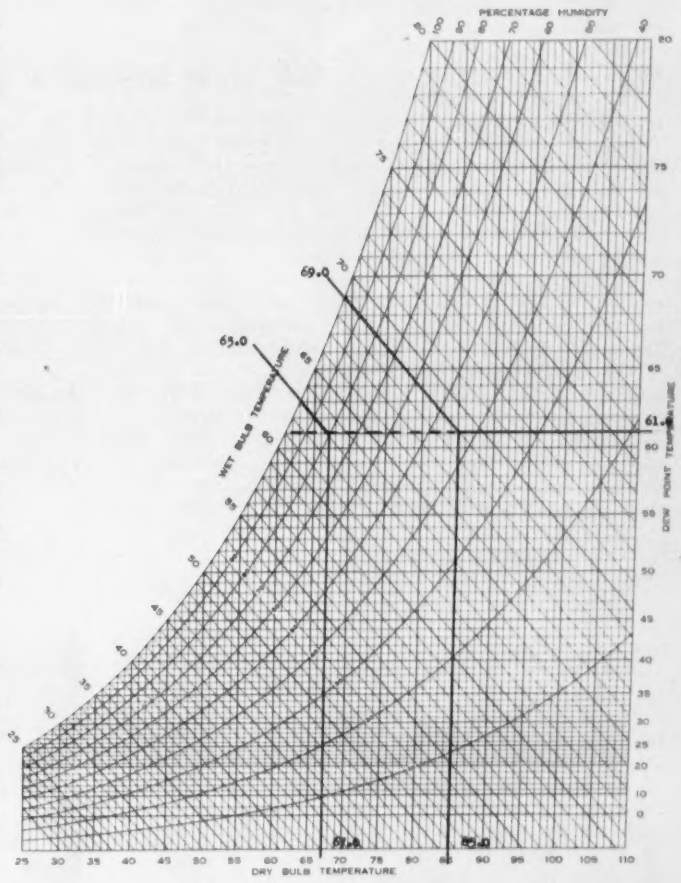

FIG. 60—Example of sensible cooling.

By consulting Fig. 60 one can see that the Dewpoint remains constant.

(To Be Continued)

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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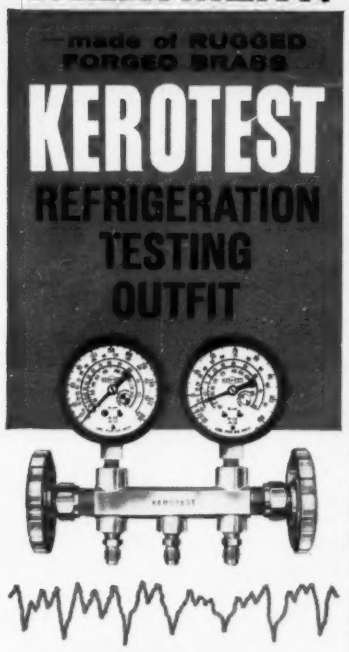

✓ All connections in accordance with ARI specifications.

✓ Furnished with or without gauges.

✓ Furnished with or without handwheels.

✓ Clearview, accurate gauges.

The Kerotest Refrigeration Testing Outfit is used for a variety of services including:

Purging air or gas from high side of system—charging oil in low side—testing low side controls—charging liquid gas in high side—charging gas into low side—setting expansion valves—purging gas from gauge lines.

Kerotest Refrigeration Testing Outfits withstand severe service day after day. Sturdy forged brass construction in single or double units. Write for full information or send for catalog.

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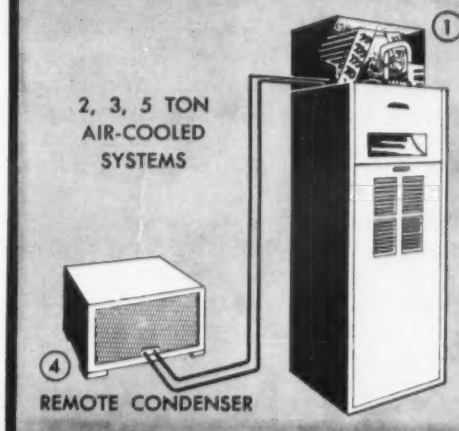
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MCAA and NAPC Get Report on Merger Study--

(Concluded from Page 1, Col. 5)
termediate level between the national and locals and MCAA insistence on autonomous locals belonging directly to the national group, the committee proceeded no further.

Instead it agreed to submit a report of the study to date to each national association for consideration and decision.

No new meeting dates were contemplated or tentatively scheduled.

The report concluded: "Members of the joint committee throughout their deliberations at all times considered their approach to the problem on the basis of establishing an 'Ideal Trade Association.'

"An analysis of the agenda indicated that certain shortcomings, inefficiencies, and lack of complete service by existing national associations was not in the best interest of an association aiming toward a complete industry service for contractors.

"The committee feels that they have established definite progress for continuing liaison in the contractor area and unless this cooperation is continued, much valuable ground will have been lost."

The report outlines all events leading to the formation of the study committee and a resume of its work. The joint committee was organized last fall and held its first meeting on Nov. 14. It met again in January and for the third and final time in February.

The study outlined each association's position on 13 agenda items and the joint committee's position on the subjects. The joint committee's approach was to try to establish the ideal trade association.

The 13 items on the agenda were name, purposes and objects, membership qualifications, method of voting, election of officers and board of directors, dues structure, conventions, standing committees, association managers' and secretaries' conference, amending by-laws, by-laws only versus constitution and by-laws, legal phases in merger, and publications.

The differences of opinion that brought on the impasse were as follows:

NAPC believes that all contractors should be members of local associations. All local associations should be affiliated with state associations and the state associations affiliated with the national.

Dues should be paid through the successive steps of organization.

NAPC argues that experience shows that such organization is necessary for a large organization of 10,000 to 15,000 members encompassing 450 to 500 locals. It considers it unrealistic and impractical to agree on another form of organization structure which does not appear to have the elements of success.

MCAA opposed this form of organization on the grounds that:

1. There is little apparent community of interest between the large city local associations, composed primarily of straight line contractors, and a state association composed of local associations from smaller communities where contractors operate combination shops.

2. Basic concept of MCAA is local autonomy and to compel local associations to join state associations would interfere with this basic concept.

The study report said that NAPC has 9,000 members and MCAA 1,200 members. About 600 of these belong to both groups. That would give the proposed merged association a membership of 9,600.

G-E 'Sit-In Strikers' at Bloomfield--

(Concluded from Page 1, Col. 2)
themselves together and refused to leave the plant, to protest the approaching shutdown.

The following Monday morning, management officials of the plant announced that they had found it impossible to continue factory operations any longer "because of the demonstrations being conducted by local union officials."

By noon of that day, the band of "sit-in strikers" had dwindled to four, later to three, and then to two. The next day, the last two left, reportedly after being fired. Earlier, the local union wired President Eisenhower and New Jersey members of Congress, appealing for assistance to save the jobs of workers affected by the closing.

Last December, G-E announced that it would stop making and selling large equipment for the central air conditioning of commercial and industrial buildings that it had been producing at its Bloomfield plant, and that the plant would close on April 1.

OHI Boiler, Furnace Standard--

(Concluded from Page 1, Col. 5)
John W. Olson, of the Nu-Way Corp.

"In areas where there are OHI chapters, administration of the new installation standards will be largely in their hands," it was explained. "In other areas it will be administered by the OHI of America direct with dealers in the area.

"Oil Heat installations which subscribe to the B-58 and B-59 standards will be entitled to have affixed to them a special medallion or seal attesting to this fact. In areas where the National Warm Air Heating & Air Conditioning Association's "Silver Shield" program is operative the OHI standards project is expected to tie in with this program."

The Applications Committee which will administer the program for the OHI consists at present of T. R. Loizeaux, T. R. Loizeaux Fuel Co.; Fred Heaney, Skaggs-Walsh, Inc.; Charles H. Burkhardt, national secretary, Distribution Div., OHI; C. E. Elliott, C. L. Elliott Co.; Harry Giffords, Giffords Oil Co., all from the OHI's Distribution Div.

The committee will be enlarged to include representatives of all OHI divisions as well as additional Distribution Div. members, according to the announcement.

The project will have an initial "test run" in three pilot areas, to be selected by the committee. The pilot program will operate for a period of six to eight months during which time it can be determined the most effective and efficient methods to introduce and promote its application in other areas, according to OHI.

A NEW
"Hot Rod"
ELECTRIC
DEFROST
SYSTEM by McQuay

The new McQuay Hot Rod electric defrost unit cooler gets its name from the brass sheathed calrod heating elements which run through the center section and rapidly defrost the coil. All models of the Hot Rod unit cooler feature casings of hammered aluminum, and are equipped with built-in heat exchangers. McQuay proven quality construction provides direct metallic contact between the heating elements and aluminum fins giving you more complete, trouble-free refrigeration with automatic electric defrosting and without wasting heat. The aluminum drain pan is heated electrically for positive de-icing. All electric heating elements, both fin coil and drain pan, are accessible and easily removable without disturbing the coil or drain pan.

There are eight sizes of McQuay Hot Rod systems ranging in capacity from 3,000 to 32,000 Btu/hr at 10° T.D. Contact the McQuay wholesaler in or near your city, or write McQuay, Inc., 1607 Broadway Street N.E., Minneapolis 13, Minnesota.

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